NOV 29 1937

MEDICAL LIBRARY

This Issue Exceeds 98,300 Copies

THE JOURNAL

OF THE

American Medical Association

Subscription, $7.00 | PUBLISHED WEEKLY | Single Copies, 25 Cents

VOLUME 109, No. 22

COPYRIGHT, 1937, BY AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street, Chicago, Ill.

NOVEMBER 27, 1937

CONTENTS AND SUBJECT INDEX

Acute Coronary Occlusion. C. C. Wolferth, M.D., Philadelphia.1769

Coronary Disease. R. Earle Glendy, M.D.; Samuel A. Levine, M.D., and P. D. White, M.D., Boston...1775
Discussed by Drs. Marvin, Stroud and White.

Treatment of Coronary Sclerosis by Producing a New Blood Supply. Harold Feil, M.D., and Claude S. Beck, M.D., Cleveland.....1781
Discussed by Drs. Yater, Shube, Levy, Beck and Feil.

Theelin Therapy in the Psychoses. C. C. Ault, M.D.; E. F. Hoctor, M.D., Farmington, Mo., and A. A. Werner, M.D., St. Louis.....1786

Congenital Occlusion of the Choana. Carl M. Anderson, M.D., Rochester, Minn.....1788
Discussed by Drs. Schaeffer, Schenck, Grove, New and Anderson.

Tryparsamide Therapy of Neurosyphilis. Leo L. Mayer, M.D., Chicago 1793
Discussed by Drs. Cordes, Lillie and Mayer.

Immunity to Smallpox. M. W. Husband, M.D., and David T. Loy, M.D., Manhattan, Kan.....1797

CLINICAL NOTES

Epinephrine Inhalations. E. W. Klinefelter, M.D., York, Pa...1798

Reaction to Sodium Morrhuate Injections. J. Tecumseh N. McCastor, M.D., and Mary Cousins McCastor, M.D., New York.....1799

Unusual Relation Between Menstrual Function and Ascites. Shattuck W. Hartwell, M.D., Muskegon, Mich., and Walter R. Johnson, M.D., Asheville, N. C.....1800

SPECIAL ARTICLES

Air Conditioning. Emery R. Hayhurst, M.D.; A. I. Brown, M.E., Columbus, and Richard Kahn, B.M.E., Dayton, Ohio.....1802

First Annual Summary of Fourth of July Injuries: Second Series.1806

SPECIAL CLINICAL ARTICLE

Efficacy of Digitalis Preparations. William D. Stroud, M.D., and Joseph B. Vander Veer, M.D., Philadelphia 1808

COUNCIL ON PHYSICAL THERAPY 1812

COUNCIL ON PHARMACY AND CHEMISTRY

Comparison of the Analgesic Action of Pantopon and Morphine Sulfate. J. M. Hayman Jr., M.D., and Herbert Fox, M.D., Cleveland....1813

COUNCIL ON FOODS 1814

EDITORIALS

Principles and Proposals of the Committee of Physicians.....1816

Measles 1817

Calcium and Blood Coagulation.1818

CURRENT COMMENT

The Fourth of July Record.....1818

Rabies in Alabama.....1818

BUREAU OF LEGAL MEDICINE AND LEGISLATION 1843

(Subject Index on next page)

ORGANIZATION SECTION
Facing page 1862

Broadcasting Health Material for America's Schools.....85B

British Medical Association.....87B

A. M. A. SESSION—San Francisco—JUNE 13-17, 1938

TUFT'S CLINICAL ALLERGY

An Immediate Success!—Yes, Dr. Tuft's *brand new* book has been a *"best seller"* from the day it came off press just a few months ago. And the reason for this success is because it satisfies so thoroughly the Medical Profession's long-felt need for a *clinical* book on Allergy.

Dr. Tuft gives you today's knowledge of Allergy—but far more than just that, he *applies* this knowledge to the diagnosis and treatment of diseases and conditions common in everyday practice. For example, he devotes *105 pages to Asthma and its Treatment.* He gives extensive discussions of Migraine, Hay Fever, Allergic Rhinitis, and others. He includes a complete section on Allergic Dermatoses and Allergy in relation to the Specialties, with an entire chapter on Allergy in Children. There are individual chapters on serum allergy, drug allergy, food allergy, pollen allergy, and other etiologic types—each of them presented with the *clinical* aspects uppermost in mind.

Dr. Tuft helps you in making an accurate diagnosis and in the institution of effective therapeutic measures. He describes causes and symptoms and gives you the full technic and interpretation of the various new and standard tests. He includes dozens of *tested prescriptions,* while a Summary of essential highlights concludes each chapter. Numerous "Thumb-nail Outlines" of important diagnostic and therapeutic facts, differential diagnosis tables, laboratory methods, directions for asthma and hay fever patients, allergic diets and recipes, etc., etc., are just a few of the many other clinical features throughout the book.

By Louis Tuft, M.D., Chief of Clinic of Allergy and Applied Immunology, Temple University Hospital. Introduction by John A. Kolmer, M.D., Dr.P.H., D.Sc., LL.D., L.H.D., Professor of Medicine, Temple University. Octavo of 711 pages, illustrated, with 6 colored plates. Cloth, $8.00 net.

Other SAUNDERS BOOKS Described on Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics.

A. M. A., principles and proposals of Committee of Physicians E-1816
Abscess, perinephric, renal fixation in ... ab-1848
Accidents, Fourth of July *1806; E-1818
Air conditioning, equipment *1802
Alcoholism in school children 1827
American Board of Dermatology and Syphilology, examination 1823
Androgens, inhibit menstruation ab-1857
Anemia, pernicious, with diabetes ab-1855
Anesthesia, liver function during ab-1859
Angina Pectoris, produce new cardiac blood supply in *1781
Ankle clonus in infant 1835
Appendectomy, technic ab-1854
Appendix, diverticula formation ab-1861
Appetite, rôle in control of body weight ab-1857
d'Arsonval, Professor, honored 1826
Arteries, coronary, acute occlusion *1769
coronary disease in youth *1775
coronary, postmortem examination ab-1862
peripheral, diseases, diagnosis ab-1861
Arteriosclerosis, cerebral, theelin therapy .. *1788
coronary, treatment *1781
intermittent claudication in ab-1845
short wave diathermy in 1836
Ascites in liver cirrhosis, relation to menstruation *1800
Audiometers, Council requirements 1812
Barrett, Joseph E., heads hospital commission, Michigan 1820
Belching 1838
Blindness, idiopathic, after quinidine 1829
Blood, carotene and vitamin A in ab-1860
coagulation and calcium E-1818
transfusion, "total" in dementia praecox ab-1862
Board Examinations 1839
Book Notices 1840
Books Received ..... Adv. page 34
Bossard, Marcus, honored 1823
Brain tumors, unusual signs ab-1851
tumors, abscess, treatment 1828
Branchial Apparatus, true cyst ab-1851
Breast cancer, preoperative irradiation .. ab-1850
Bureau of Investigation 1832
Bureau of Legal Medicine and Legislation . 1843
Calcium and blood coagulation E-1818
Cancer, congo red for roentgen sickness ... 1838
exhibit; program, New York 1821
Carbohydrate metabolism 1829
Cartilage, skeletal diseases 1829
Choana, congenital occlusion *1788
Colds, vaccines, industrial use ab-1848
Colorado State Medical Society mid-winter clinics 1819
Coma, definition of C-1833
Congress, U. S., medical bills in 1823
Correspondence 1833
Council on Foods 1814
Council on Pharmacy and Chemistry 1813
Council on Physical Therapy 1812
Cube, possible toxicity 1836
Cyclotron, prize to inventor 1823
Deaths 1830
Dementia Paralytica, tabetic form 1834
Dementia Praecox, insulin and metrazol for ab-1862
insulin shock for C-1833; C-1834
theelin therapy *1787
"total transfusion" in ab-1862
Derris, possible toxicity 1836
Diabetes Mellitus, pernicious anemia with .. ab-1855
Digitalis preparations, clinical efficacy *1808
Diuresis, rapid, dangers ab-1852
Doyle, Joseph H., honored 1823
Edema, angioneurotic, epinephrine inhalations in *1798
protein deficiency ab-1854
Embryology, animal 1827
Endocarditis and rheumatic fever ab-1847
Epigastrium pain, attacks 1837
Epinephrine inhalations in angioneurotic edema *1798
Estrogens, theelin therapy in psychoses ... *1786
treatment of infantile uterus 1838
Ethmoid Sinus, injuries ab-1856
Fellowship, Jacobi, available 1823
Fever, therapeutic, shock in ab-1850
Fistula, neck ab-1851
Foreign Letters 1824
Fourth of July injuries *1806; E-1818
Frontal Sinus injuries ab-1856
Gallbladder disease, chronic, earlier operation in ab-1851
Garrison, Fielding H., letters C-1834
Gas warfare, air raids 1825
German Anatomical Society meeting 1824
Gonadotropic Principles, treatment of infantile uterus 1838
Gonorrhea, cure of, and menstrual pain 1837
Government Services 1824
Harrison Narcotic Act: addicts; sales by physician to Ml-1844
Health, public health day, Connecticut 1819
Heart disease, digitalis preparations *1808
disease patients, work for 1829
electrocardiogram in coronary occlusion . *1772
muscle, hyperplasia and regeneration .. ab-1847
output, effect of posture ab-1847
producing new blood supply to *1781
surgery 1828
Hemochromatosis, iron metabolism in ab-1853
Hemophilia, treatment, coagulation-promoting substance from normal serum ab-1846
Herpes Zoster, autohemotherapy ab-1855
Hip Joint, tuberculosis and congenital dislocation 1837
Hospitals, Allentown State, anniversary ... 1822
"blot on London medicine" 1825
charitable, liability to pay patients ... Ml-1844
Colorado Association 1819
Foch Foundation, opening 1825
insurance, committee to study 1823
Hydrocele, reaction to sodium morrhuate injections *1799
Hyperthyroidism, effect of yeast on liver glycogen ab-1853
Idiocy, mongolian 1835
Indiana University library, gift to 1820
Infants, ankle clonus in 1835
growth vs. vitamin B_1 intake ab-1846
Insurance, accident: "total and permanent disability" Ml-1844
health: "totally disabled" construed .. Ml-1843
Interns' case history contest 1820
Intracranial Pressure without tumor ab-1849
Iron metabolism in hemochromatosis ab-1853
Jaundice, congenital hemolytic, skeletal roentgen changes ab-1860
high operative mortality in ab-1855
spirochetal, as industrial disease 1826
Keratitis neuroparalytica, treatment ab-1851
Kidneys, fixation in perinephric abscess .. ab-1848
movable, diagnosis; treatment ab-1848
Lawrence, E. O., awarded Comstock prize . 1823
Leishmania, culture in goat's milk ab-1860
Liver cirrhosis, ascites in *1800
function during anesthesia ab-1859
glycogen, effect of yeast on ab-1853
Lungs abscess, transmural injection of iodized oil in ab-1858
reactions to vaporized solutions 1826
Lymphogranuloma venereum, serum proteins in ab-1862
Marriages 1829
Measles, prevention and treatment E-1817
Medical Examinations and Licensure 1839
Medical Week 1827; 1829
Medicolegal Abstracts 1843
Meetings, Coming Meetings 1844
Melancholia, involutional, theelin for *1786
Meningitis, primary pneumococcic ab-1854
Menstruation after irradiation 1836
androgens inhibit ab-1857
pain and cure of gonorrhea 1837
relation to ascites in cirrhosis *1800
Mental Disease, theelin therapy *1786
Meyerding, Edward A., honored 1821
Milk, streptococcus in, stored at atmospheric temperatures ab-1856
Morphine addiction, postoperative sedative . 1839
sulfate, compared with pantopon *1813
Mouth, tuberculous ulcerations ab-1856
Muscle, generalized twitchings: myokymia .. 1835
Nephritis, hemolysis in, in saponin systems ab-1845
Nerve, optic atrophy, tryparsamide for *1793
action, chemical transmission 1828
disease (functional), increase 1824
Neurosyphilis, tryparsamide therapy *1793
New England Society of Physical Medicine, new name 1820
Surgical Society meeting 1822
News 1819
Northwestern medical school, book fair for . 1820
Nose, congenital occlusion of choana *1788
Old Age, coronary disease in *1775
circulatory system in 1829
Osteitis deformans, calcium tolerance in . ab-1853
Osteosclerosis fragilis, infantile form ... ab-1861
Otitis Media, nonsuppurative complications ab-1856
Ovary cysts, simple ab-1845
Ovulation, androgens inhibit ab-1857
Oxford medical school 1825
Pain, alcohol injections of posterior sensory roots for 1838
relief in cured morphine addict 1839
Pantopon, compared with morphine sulfate . *1813
Patents, scarlet fever C-1833
Peptic Ulcer, sodium bromide and atropine sulfate in ab-1858
Peritonitis, pneumococcus, in childhood .. ab-1859
Pharmacists: drugs; liability for injury following use of wart remover Ml-1843
Pharynx, tuberculous ulcerations ab-1856
Physicians, Committee of, proposals E-1816
distribution in 1937, Germany 1826
of the future 1824
Plague infection, California 1819
Pneumonia due to type V pneumococcus . ab-1850
laboratory service extended, Conn 1819
unresolved, positive Wassermann in 1839
vitamin A in blood serum in ab-1861
Poliomyelitis, cerebellar atactic form ab-1859
Population problems, relation to obstetrics .. 1828
Pregnancy after irradiation and ovarian tumor 1836
effect on malignant tumors ab-1847
Protein deficiency edema ab-1854
Psoriasis, autohemotherapy ab-1855
Psychoses, theelin therapy *1786
Pupil, paralyzed, response to pilocarpine ... 1839
Queries and Minor Notes 1834
Rabies in Alabama E-1818
Red Cross, American, annual report 1823
German, fight against disease 1827
Rheumatic Fever, role in endocarditis ... ab-1847
Rheumatism, consulting centers for 1824
Rotenone insect dust, toxicity 1836
Scarlet Fever patents C-1833
Scholarship offered by Ohio State 1822
Schwinn Lecture 1822
Sergent, Emile, retires 1826
Shaughnessy, Howard J., retires 1819
Skene's Ducts, anatomy 1837
Skin, action of vegetable coloring matter on . 1828
Smallpox, immunity to *1797
Society Proceedings 1844
Sodium morrhuate injections, reaction to .. *1799
Spinal Cord, surgery, 50 years 1828
State Board Examinations 1839
Sterilization, Sexual, by injecting semen ... 1838
roentgen ab-1859
Sulfanilamide, symposium on, Washington, D. C. 1819
Sweating, rusted steel from 1837
Syphilis control activities, Md 1820
familial behavior 1828
National Anti-syphilis Committee 1823
Temple University appointments 1822
Tetanus after Fourth of July injuries *1806
toxoid, response one year after immunization ab-1852
Thrombosis, coronary, with transitional glycosuria 1829
Thyroid, pathology 1828
Tonics and Sedatives ..... Adv. page 24
Tropical Medicine, Academy of 1823
American Society of 1823
Tryparsamide therapy of neurosyphilis and atrophy of optic nerve *1793
Tubercle Bacillus, saliva inhibits ab-1858
Tuberculosis allergy ab-1860
familial behavior 1828
intrathoracic calcification in tuberculin-positive infants ab-1852
Tuberculosis, Pulmonary, artificial pneumothorax, massive pleural effusions in . ab-1849
blood sedimentation rate in 1835
of lower lobe ab-1849
pressure of pneumothorax in formation of exudate ab-1860
thoracoplasty ab-1855
treatment of night sweats ab-1861
Tuttle, A. D., medical director of United Air Lines 1824
Typhoid at Brandon, Vt 1822
immunization, endotoxoid vaccine ab-1857
Urination, incontinence in female ab-1846
Uterus, infantile, hormone treatment 1838
pyometra 1836
Varicose Veins, reaction to sodium morrhuate injections *1799
Verruca, infective, from using bone glue . ab-1857
Vitamin A in human blood serum ab-1860
B_1 intake vs. infant's growth ab-1846
Water supply, oil in 1838
Wishard, William N., gift to Indiana U. ... 1820
Workmen's Compensation Acts: hemiplegia induced by excitement Ml-1843
medical treatment; physicians; selection of; implied consent by employer Ml-1843
Worthing, Harry J., appointment 1821

THE JOURNAL of the American Medical Association is published weekly by the American Medical Association, 535 North Dearborn Street, Chicago, Ill. Subscription price, $7.00 a year. 25c a copy. Canadian $8.50. Foreign $11.00. Entered as second class matter June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879.

BOOK BUYING SIMPLIFIED
We supply new and standard medical works of all publishers
ONE ORDER—ONE REMITTANCE
GET OUR LATEST BULLETIN
CHICAGO MEDICAL BOOK CO. 435 S. Honore St. CHICAGO

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 109, No. 22 — COPYRIGHT, 1937, BY AMERICAN MEDICAL ASSOCIATION CHICAGO, ILLINOIS — NOVEMBER 27, 1937

PRESENT CONCEPTS OF ACUTE CORONARY OCCLUSION

CLINICAL LECTURE AT ATLANTIC CITY SESSION

CHARLES C. WOLFERTH, M.D.

PHILADELPHIA

The terms coronary occlusion, coronary thrombosis and cardiac or myocardial infarction are often employed as synonyms, although there are useful differences in their meanings. Coronary thrombosis refers to a special type of coronary occlusion in which thrombosis is the final event in the process of occlusion. Myocardial infarction, although a frequent result of acute coronary occlusion, does not always follow it.

FREQUENCY

One of the much discussed questions of the day is whether coronary disease is becoming more frequent than it was in former years or whether it merely seems to be more frequent because some progress has been made in its recognition. All present day statistical studies reveal its importance as a cause of death. Most writers on the subject assume that its incidence is rapidly increasing. The further assumption is usually made that the increase is due to stress and strain of modern life. On the other hand, Cohn and Lingg [1] concluded from their statistical study that, if account is taken of changes in fashions in diagnosis, there has been a relatively small increase in the death rate from circulatory disease during the past thirty years and that recently the increase has been "ever slighter." Even the small increase seems to depend largely on the fall in the rate for infectious diseases in the very decades in which a rise for the circulatory group took place. They stated that belief in the theory that stress and strain of life account for increase in the death rate from cardiac diseases is unnecessary.

There appears to be considerable doubt as to the accuracy of statistics that are being collected even at the present time. Hedley [2] concluded from his study of hospital statistics that "it is not possible to obtain an accurate conception of the total number of deaths from heart disease or of any of the various etiologic types."

So far as any attempt to compare the present and the past incidence of acute coronary occlusion is concerned, physicians are almost entirely in the dark. Few persons in preceding generations even knew there was such a malady. Parkinson [3] said: "Isolated records show that a physician here and there knew that a coronary thrombosis might cause a prolonged attack of angina even with recovery." It is known, however, that coronary occlusion must have been not uncommon in Germany over fifty years ago, otherwise Leyden [4] would not have been able to recognize so many cases and write such an excellent description of its clinical features.

ETIOLOGY

In the vast majority of cases acute coronary occlusion develops at the site of an arteriosclerotic lesion. Its etiology is therefore intimately related with that of coronary arteriosclerosis and arteriosclerosis in general. As yet but little is known about the fundamental factors concerned in the production of arteriosclerosis, and there would be little profit in attempting to review current hypotheses here. Nevertheless, various facts have been learned regarding certain characteristics and relationships of coronary arteriosclerosis and acute coronary occlusion that have some bearing on the etiology of these conditions.

It has been noted that there is little evidence to support the view that increase in the stresses and strains of life is a significant factor in the present incidence of coronary disease. On the other hand, this cannot be interpreted as meaning that physical or mental strains and overwork may not be important factors in the production of this disease and also of acute coronary occlusion. Age, sex and race are all known to have an important bearing. Coronary occlusion is relatively uncommon before the fifth decade. The greatest number of cases occurs in the sixth decade, although the actual percentage incidence may be higher in later decades. It is far more common in men than in women. The recent studies of Hedley [5] and Johnston [6] show that its frequency is much greater in the white than in the Negro race. Type of weather may be a factor in precipitating acute coronary occlusion, since the data collected by Wood and Hedley [7] and Mullins [8] appear to show that in Pennsylvania acute coronary occlusion is far more common in the winter months. Coronary arteriosclerosis is observed at necropsy in the majority of persons who had been either hypertensive or diabetic. The incidence of acute coronary occlusion is high for both of these diseases.

From the Edward B. Robinette Foundation, Medical Clinic, Hospital of the University of Pennsylvania.

Read in the Medical Division of the General Scientific Meetings at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1937.

1. Cohn, A. E., and Lingg, Claire: Heart Disease from the Point of View of the Public Health, Am. Heart J. **9**: 283 (Feb.) 1934.
2. Hedley, O. F.: A Critical Analysis of Heart Disease Mortality, J. A. M. A. **105**: 1405 (Nov. 2) 1935.
3. Parkinson, John: Coronary Thrombosis and Its Relation to Angina Pectoris, Brit. M. J. **2**: 549 (Sept. 17) 1932.
4. Leyden, Ernst: Ueber die Sclerose der Coroner-Arterien und die davon abhangigen Krankheitszustande, Ztschr. f. klin. Med. **7**: 459 and 539, 1883-1884.
5. Hedley, O. F.: A Study of 450 Fatal Cases of Heart Disease Occurring in Washington (D. C.) Hospitals During 1932, with Special Reference to Etiology, Race and Sex, Pub. Health Rep. **50**: 1127 (Aug. 23) 1935.
6. Johnston, Christopher: Racial Differences in the Incidence of Coronary Sclerosis, Am. Heart J. **12**: 162 (Aug.) 1936.
7. Wood, F. C., and Hedley, O. F.: The Seasonal Incidence of Acute Coronary Occlusion in Philadelphia, M. Clin. North America **19**: 151 (July) 1935.
8. Mullins, W. L.: Age Incidence and Mortality in Coronary Occlusion, Pennsylvania M. J. **39**: 322 (Feb.) 1936.

There is considerable difference of opinion as to whether excessive use of tobacco favors the production of coronary occlusion. In this connection the observation of White [9] that all his twenty-one patients who had coronary thrombosis before the age of 40 used considerable amounts of tobacco merits attention. There is no doubt whatever that ceasing the use of tobacco lessens the incidence of pain in certain patients with coronary disease, but in a large number no beneficial effect is observed.

The opinion is widespread that coronary disease selects as its special victims professional men and executives who are subject to heavy strain and responsibility. Analysis of the causes of death among American physicians in 1936 shows clearly the terrific effects of this disease and its complications in members of the medical profession.[10] Similar careful analyses of other occupational groups for purposes of comparison are needed in the effort to obtain data bearing on certain possible etiologic factors concerning which there is no clearcut evidence at present. In addition, studies regarding the influence of heredity are needed.

The two other causes of coronary occlusion besides coronary arteriosclerosis and its sequelae which deserve mention are syphilitic disease of the coronary arteries and embolism. Coronary occlusion due to syphilis is not common unless aortic insufficiency is present.[11] Embolism is a comparatively rare cause of coronary obstruction. Saphir [12] reported three cases and was able to find only eleven other acceptable cases in the literature. Levy, Bruenn and Kurtz [13] observed six cases in 2,877 necropsies.

PATHOGENESIS

The occurrence of myocardial infarction following coronary occlusion apparently depends on whether or not adequate collateral circulation is available for the area deprived of its customary blood supply. There have been considerable differences of opinion as to whether coronary arteries are end arteries or whether there is free anastomosis. Experimental work since the time of Cohnheim [14] has indicated that collateral flow is extremely small and insufficient to support contraction in an area rendered ischemic by ligation of a main branch. It has been demonstrated by electrocardiography that myocardial injury currents develop within one or two minutes after even a small coronary vessel is obstructed,[15] and recently Tennant and Wiggers [16] showed that after coronary obstruction, contraction in the ischemic area stops within one minute. According to Wiggers,[17] however, the experimental results do not preclude enlargement of minute potential communications or development of new ones when a main branch is slowly occluded. Under such circumstances, altered pressure gradients distend "normally useless channels" and so furnish a supply of blood under pressure for newly growing vessels. Some such explanation must account for the frequent finding of coronary occlusion without myocardial infarction and particularly for such cases as the two reported by Leary and Wearn,[18] in which complete occlusion of both coronary orifices had occurred without any signs of myocardial infarction.

Suggestions have been made that a new blood supply may be derived from thebesian vessels, from the vasa vasorum about the root of the aorta, from pericardial vessels or from reversal of flow in the venous system. However, it seems probable that the usual source of collateral circulation after myocardial infarction is the coronary circulation itself. That anastomoses are present has been shown by Gross and Kugel,[19] even though all available evidence indicates that in normal hearts the collateral flow is extremely small. The assumption that collateral circulation develops only when it is required may explain the interesting observation by Beck and Tichy [20] that new blood vessels can be made to grow into the myocardium only when there is need for more circulation.

The experimental evidence suggests that the most dangerous type of clinical coronary occlusion should be sudden obstruction in an otherwise intact coronary circulation. Coronary embolism offers the chance of studying in the human being the effect of sudden obstruction in a previously healthy coronary system. Saphir [12] stated that sudden death is the striking feature of this condition. Of the fourteen patients he studied, twelve died suddenly. In striking contrast is the result of syphilitic occlusion of a coronary orifice, which is usually gradual in its development. Bruenn [11] stated that infarction is relatively rare in cases of syphilitic coronary occlusion. One may postulate, therefore, that among the important variables in human coronary occlusion, in addition to size and location of vessels obstructed, are the following factors:

1. The rapidity of development of occlusion. If occlusion occurs suddenly, more disastrous effects may be looked for than if it had occurred gradually, because of lack of time for the development of functionally useful collateral channels. However, in the majority of cases in which the clinical picture of acute coronary occlusion occurs, it seems probable that the final acute occlusive process (usually thrombosis) takes place in a vessel whose lumen has already been considerably reduced. The relative contribution of thrombosis to this process of occlusion may be the deciding factor in the severity of the attack.

2. The integrity of the circulation adjacent to the area supplied by the occluded vessel. Sprague and Orgain [21] stated that coronary thrombosis with closure limited to a single artery or branch of an artery is relatively rarely observed at necropsy. Saphir, Priest, Hamburger and Katz [22] stated that in their cases whenever an infarct was found at least two branches were

9. White, P. D.: Coronary Disease and Coronary Thrombosis in Youth, J. M. Soc. New Jersey **32**: 596 (Oct.) 1935.
10. Obituaries of Physicians Published in 1936, editorial, J. A. M. A. **108**: 1542 (May 1) 1937.
11. Bruenn, H. G.: Syphilitic Disease of the Coronary Arteries, Am. Heart. J. **9**: 421 (April) 1934.
12. Saphir, Otto: Coronary Embolism, Am. Heart J. **8**: 312 (Feb.) 1933.
13. Levy, R. L.; Bruenn, H. G., and Kurtz, Dorothy: Facts on Disease of the Coronary Arteries, Based on a Survey of the Clinical and Pathological Records of 762 Cases, Am. J. M. Sc. **187**: 376 (March) 1934.
14. Cohnheim, J., and Schulthess-Rechberg, A. V.: Ueber die Folgen der Kranzarterienverschliessung fur das Herz, Virchows Arch. f. path. Anat. **85**: 503, 1881.
15. Wood, F. C., and Wolferth, C. C.: Experimental Coronary Occlusion: Inadequacy of the Three Conventional Leads in Recording Characteristic Action Current Changes in Certain Sections of the Myocardium; an Electrocardiographic Study, Arch. Int. Med. **51**: 771 (May) 1933.
16. Tennant, Robert, and Wiggers, C. J.: The Effect of Coronary Occlusion on Myocardial Contraction, Am. J. Physiol. **112**: 351 (June) 1935.
17. Wiggers, C. J.: The Inadequacy of the Normal Collateral Coronary Circulation and the Dynamic Factors Concerned in Its Development During Slow Coronary Occlusion, Am. Heart J. **11**: 641 (June) 1936.
18. Leary, Timothy, and Wearn, J. T.: Two Cases of Complete Occlusion of Both Coronary Orifices, Am. Heart J. **5**: 412 (April) 1930.
19. Gross, Louis, and Kugel, M. A.: The Arterial Blood Vascular Distribution to the Left and Right Ventricles of the Human Heart, Am. Heart J. **9**: 165 (Dec.) 1933.
20. Beck, C. S., and Tichy, V. L.: The Production of a Collateral Circulation to the Heart, Am. Heart J. **10**: 849 (Oct.) 1935.
21. Sprague, H. B., and Orgain, E. S.: Electrocardiographic Study of Cases of Coronary Occlusion Proved at Autopsy at the Massachusetts General Hospital, 1914-1934, New England J. Med. **212**: 903 (May 16) 1935.
22. Saphir, Otto; Priest, W. S.; Hamburger, W. W., and Katz, L. N.: Coronary Arteriosclerosis, Coronary Thrombosis and the Resulting Myocardial Changes, Am. Heart J. **10**: 567 (June), 762 (Aug.) 1935.

involved. On the other hand, Moritz and Beck [23] found in their series of ninety-four cases that only the left coronary artery was occluded in 54 per cent, only the right in 13 per cent and both the left and the right in 33 per cent.

CLINICAL FEATURES

Smith, Rathe and Paul [24] have emphasized the intimate relationship between angina of effort, severe anginal pain (coronary occlusion) and paroxysmal dyspnea. They found that any one of these three conditions might be the first manifestation of coronary disease. Shortness of breath was the most common initial symptom and frequently persisted for months or years before other evidences of impaired cardiac function made their appearance. In approximately 50 per cent of the cases in which the initial manifestation was coronary occlusion, angina of effort later developed. The relation between coronary occlusion and paroxysmal dyspnea was found to be equally close.

There is a latent or symptomless period in coronary arteriosclerosis which may last a long time. During this period, physical examination may reveal nothing significant, although impairment of exercise tolerance may sometimes be discovered. Moreover, the electrocardiogram may or may not show significant changes. Many persons in this period are able to pass life insurance examinations without difficulty. The electrocardiogram may be abnormal, however, for years before clinical manifestations appear. Some patients complain of easy fatigability, gastro-intestinal disturbances and nervous irritability or insomnia long before the first definite evidence of cardiac disorder. The latter may take any of the following forms: (1) shortness of breath on effort, (2) angina pectoris, (3) acute coronary occlusion, either coming like a bolt from the blue or preceded by one or more so-called pilot attacks of anginal pain, less commonly (4) disturbances of cardiac mechanism such as auricular fibrillation or heart block and (5) paroxysmal dyspnea or trepopnea.[25]

The various clinical phenomena of coronary disease may be conveniently classed in four categories: (1) abnormalities of cardiac mechanism, (2) angina pectoris, (3) acute coronary occlusion and (4) heart failure, including paroxysmal dyspnea. In any case these may be present singly or in various combinations. All may be present at the same time. Occlusion of coronary vessels and heart failure are the end results of progressive coronary disease. Acute coronary occlusion, however, with myocardial infarction should probably be looked on as an accident in the course of the disease. It is this condition, talked about so much by physicians and now feared by laymen, which makes the course of coronary disease so unpredictable.

SYMPTOMS

The outstanding symptom of onset is pain or severe distress. Most characteristic is the constricting or so-called viselike substernal pain. However, the distress may be described as a burning, boring, aching or choking sensation or a feeling as though something inside were being distended to the bursting point. Although these various types of distress are characteristically severe, sometimes they are mild. The various locations of pain are well known, but left subscapular pain has not been sufficiently emphasized in the literature. Articles are to be found stressing the frequency of occurrence of coronary occlusion and myocardial infarction without pain.[26] The occurrence may depend to some extent at least on the rapidity of development of lesions. The tabulation of the anginal type of pain from histories, however, does not yield reliable data. If pain is mild or occurred some time in the past, patients frequently fail to volunteer a statement about it and, as a matter of fact, often seem to forget it. Furthermore, they will frequently deny having had pain, but on questioning will admit having suffered one of the other types of distress mentioned.

The anginal type of pain or distress probably occurs in nearly every case of acute myocardial infarction. Jervell [27] in his monograph stated that he found electrocardiographic evidence of acute myocardial infarction in but one patient who suffered no pain. I have seen only two or three patients with definite electrocardiographic evidence of recent infarction from whom a history of pain or other anginal type of distress could not be elicited.

On the other hand, the occurrence of prolonged and severe attacks of pain without subsequent clinical or electrocardiographic evidence of myocardial infarction is far from rare. In a number of cases reported of death following prolonged anginal attacks, necropsy failed to reveal evidence of important coronary disease or any other cause of death. Leary [28] has recently reported cases in which death was attributed to coronary spasm.

The characteristic signs often attributed to coronary occlusion—fall in blood pressure, narrowing of the pulse pressure, congestive failure (of which pulmonary congestion is the outstanding feature), fever, leukocytosis, friction rub, faint heart sounds, gallop rhythm, abnormalities of cardiac mechanism, increased sedimentation rate of red cells and electrocardiographic changes—are due to myocardial infarction rather than to coronary occlusion per se. The enfeeblement of cardiac action and the characteristic drop in blood pressure and narrowing of pulse pressure are probably due in part to the fact that, the infarcted area being no longer able to contract, the remainder of the heart muscle is unable to carry on efficiently. Tennant and Wiggers [16] stated that the tendency to development of hypodynamic ventricular beats following coronary occlusion can be explained by loss of pressure due to systolic stretching of the areas in which contraction is enfeebled or absent. Thus, infarction not only lessens cardiac efficiency by putting out of commission part of the muscle but actually diminishes the efficiency of the surviving muscle through the dissipation of intraventricular pressure by the stretching of the injured area. This mechanism probably accounts in part also for the behavior of the blood pressure.

Fever, leukocytosis and increased sedimentation rate of erythrocytes are of no value in the differentiation of myocardial infarction from other lesions which may also produce these responses but may be of considerable help in the decision as to whether or not infarction has actually taken place after an attack of pain. Change in sedimentation rate is according to my experience the

23. Moritz, A. R., and Beck, C. S.: The Production of a Collateral Circulation to the Heart, Am. Heart J. **10**: 874 (Oct.) 1935.
24. Smith, F. M.; Rathe, H. W., and Paul, W. D.: Observations on the Clinical Course of Coronary Artery Disease, J. A. M. A. **105**: 2 (July 6) 1935.
25. Wood, F. C., and Wolferth, C. C.: The Tolerance of Certain Cardiac Patients for Various Recumbent Positions (Trepopnea), Am. J. M. Sc. **193**: 354 (March) 1937.
26. East, C. F. T.; Bain, C. W. C., and Cary, F. L.: Cardiac Infarction Without Pain, Lancet **2**: 60 (July 14) 1928. Saphir, Priest, Hamburger and Katz.[22]
27. Jervell, Anton: Elektrokardiographische Befunde bei Herzinfarkt, Acta med. Scandinav., supp. **68**: 1-267 (Jan.) 1935.
28. Leary, Timothy: Coronary Spasm as a Possible Factor in Producing Sudden Death, Am. Heart J. **10**: 338 (Feb.) 1935.

most sensitive indicator of the three. The rate may become accelerated when fever is absent, the leukocyte count normal and the electrocardiographic appearance uncertain. Furthermore, it often remains abnormal for a considerable time after the electrocardiogram no longer shows evidences of acute injury or significant changes in successive serial tracings.

Friction sounds probably are not elicited in more than 25 per cent of cases. They are often evanescent, lasting only a few hours; occasionally they persist for a number of days. Since pericardial involvement may extend a considerable distance beyond the area of infarction, a friction sound need not necessarily originate directly over the myocardial lesion.

Tachycardia occurs in the majority of cases but is occasionally absent, particularly in cases of posterior infarction. Paroxysms of auricular fibrillation occur most frequently when the infarction is in the area of the anterior descending branch. Heart block tends to be associated with posterior infarction. Extrasystoles occur with infarction in any location.

ELECTROCARDIOGRAPHIC DIAGNOSIS

Prior to the addition of chest leads to electrocardiographic technic, it had been found that, while serial electrocardiograms often revealed the presence of acute myocardial injury, single tracings frequently failed to do so. In experimental coronary occlusion, significant changes often failed to make their appearance in the tracings although myocardial anoxemia was obvious. In an attempt to investigate this problem,[22] it was found that in dogs injury currents could be recorded after obstruction of even a small coronary vessel, provided an electrode was placed on the area of its distribution. This indicated that the changes were present but that the limb leads did not always reflect them. It then occurred to experimenters to try chest leads. These had often been used in the past for other purposes, notably by Waller [29] and Lewis.[30] After Lewis's work it had been the practice for many years to use chest leads with one electrode over the auricular area whenever limb leads did not satisfactorily record auricular activity. When chest leads were applied to the study of acute coronary occlusion, first in experimental animals and then in patients, it was discovered that certain lesions which produced only equivocal changes or none at all in the limb leads showed spectacular injury currents in the chest leads.[31] During the next few years much was learned as a result of the contributions of many investigators, notably F. N. Wilson, regarding the value and limitations of chest leads as a supplement to the conventional limb leads in the study of myocardial infarction, and various diagnostic patterns have been established.[32]

Despite the advances in electrocardiography, this method should under no circumstances replace careful history taking and physical examination. An electrocardiogram is, however, such a valuable check on clinical examination in helping to establish or rule out the diagnosis that it should be used in every case in which coronary occlusion is suspected.

In certain recent studies of pathologic material, such as those of Sprague and Orgain [21] and Saphir, Priest, Hamburger and Katz,[22] it would appear that electrocardiography had not made a good showing. Barnes [33] however stated that, when changes characteristic of acute myocardial infarction fail to develop, it will usually be found that tracings were not obtained in sufficient numbers or at the proper time in relation to acute occlusion, that multiple acute infarctions of the left ventricle were present, that bundle branch block obscured the changes, that pericarditis or pericardial effusion modified the electrocardiographic changes or that the tracing was made at about the time of death. The observations of Barnes were based on the use of limb leads alone. If chest leads are also used, one may modify the statements of Barnes in the following way: Serial tracings are not so often necessary, multiple acute infarctions [34] rarely obscure the diagnosis and the changes produced by pericarditis (more correctly speaking, by the myocarditis associated with pericarditis) can usually be differentiated from those produced by myocardial infarction.[35]

During the past five years, since my co-workers and I have used chest leads as a supplement to limb leads, not a single patient of the thirty-two who have come to necropsy with an electrocardiographic diagnosis of acute myocardial infarction has failed to show such a lesion. Moreover, no patient studied post mortem thus far has shown acute infarction which electrocardiograms had failed to disclose. There has been one equivocal case—a case of dissecting aneurysm in which blood had infiltrated the right ventricle and caused acute destruction of muscle tissue. Nevertheless it is probable that certain small acute infarctions cannot be detected by electrocardiography, although none of these have been observed at our necropsies.

In the diagnosis of healed infarction, electrocardiography is not nearly so sensitive a method. The changes produced by infarction on the lateral or posterolateral wall of the left ventricle often disappear fairly rapidly so that they can no longer be recognized. The electrocardiographic pattern in the healed stage of posterior infarction is scarcely pathognomonic, although it may be regarded as reliable evidence of damage to this area of the heart. The pattern of the healed stage of anterior or apical infarction, however, tends to persist for a long time, at least in part, particularly in the chest leads, so that unmistakable evidence of the lesion may still be present many years after the attack.

DIFFERENTIAL DIAGNOSIS

Almost any condition capable of producing acute pain or distress in the same area as coronary occlusion may at one time or another present a problem in differential diagnosis. The list of conditions is greatly lengthened by the fact that the pain of coronary occlusion is often comparatively mild and the subsequent manifestations so slight as to escape attention. Thus, acute perforation of a gastric ulcer, gallbladder colic, acute pancreatitis, acute pericarditis or other acute mediastinal inflammatory condition, dissecting aneurysm of the aorta, pulmonary embolus, pleurisy or beginning pneumonia must be considered. Arthritis of the spine

29. Waller, A. D.: A Demonstration on Man of the Electromotive Changes Accompanying the Heart's Beat, J. Physiol. **8**: 229, 1887.
30. Lewis, Thomas: The Mechanism and Graphic Registration of the Heart Beat, ed. 3, London, Shaw & Sons, Ltd., 1925, pp. 293-343.
31. Wolferth, C. C., and Wood, F. C.: The Electrocardiographic Diagnosis of Coronary Occlusion by the Use of Chest Leads, Am. J. M. Sc. **183**: 30 (Jan.) 1932; Further Observations upon the Use of Chest Leads in the Electrocardiographic Study of Coronary Occlusion, M. Clin. North America **16**: 161 (July) 1932.
32. Wolferth, C. C., and Wood, F. C.: The Electrocardiographic Diagnosis of Myocardial Infarction, Modern Concepts of Cardiovascular Disease, vol. 4, No. 5, May 1935. No. 6, June 1935.
33. Barnes, A. R.: The Electrocardiogram in Myocardial Infarction, Arch. Int. Med. **55**: 457 (March) 1935.
34. Wolferth, C. C., and Wood, F. C.: Acute Cardiac Infarction Involving Anterior and Posterior Surfaces of the Left Ventricle, Arch. Int. Med. **56**: 77 (July) 1935.
35. Bellet, Samuel, and McMillan, T. M.: Electrocardiographic Patterns in Limb and Precordial Leads in Acute Pericarditis: A Study of 55 Cases, read before the Section on General Medicine, College of Physicians of Philadelphia, March 29, 1937, to be published.

or shoulder, spasm in the gastro-intestinal tract (esophagus, pylorus or colon), lesions of the diaphragm such as eventration, neuritis or functional neuroses may all lead to mistakes in diagnosis. Perhaps the most difficult of all is the differentiation between a prolonged attack of angina pectoris and acute coronary occlusion. There is an important border zone between these two conditions into which many cases fall. In some, serial electrocardiograms with chest leads and erythrocyte sedimentation tests show changes indicating that at least a slight myocardial lesion has occurred.

The electrocardiographic picture of acute coronary occlusion is simulated to some extent by a variety of conditions [36] which need not be mentioned here. However, most of the conditions which cause difficulty in the clinical differential diagnosis do not produce significant alterations in the electrocardiogram. Thus, combined clinical and electrocardiographic study with chest leads greatly simplifies the differential diagnosis.

SUBSEQUENT COURSE AND PROGNOSIS

Probably the great majority of early sudden deaths are due to ventricular fibrillation. Other causes of sudden death are embolism and ventricular rupture, although these conditions are less common causes and rarely occur until myocardial infarction is at least a few days old.

Among persons who escape sudden death in the early stage of acute coronary occlusion the commonest cause of death is myocardial insufficiency. The mechanism of heart failure, particularly in the first week, may consist of loss of ability to drive the blood forward through the systemic circulation. The patient may exhibit little or no dyspnea and no marked pulmonary edema, but the pulse literally fades out; in some cases the rate is rapid, but in others it is not increased. Possibly the loss of intraventricular pressure due to stretching of the infarcted area is partly responsible for this behavior.

Recurrent attacks of pain are common during the acute stage of myocardial infarction, and serial electrocardiograms may show that some of these attacks are accompanied by an extension of the area of infarction. Such recurrence may change what seemed to be a favorable course to an unfavorable one.

Hochrein and Schneyer [37] observed a mortality rate of 71 per cent in 226 cases, whereas Master, Jaffe and Dack [38] reported a mortality rate for the first attack of 8 per cent and a mortality rate for all attacks of 16.5 per cent. The figures of other observers range between these two extremes. It is generally agreed that the mortality rate is influenced by (1) age of the patient (the rate being lower for relatively young people than for the older age groups), (2) number of attacks (mortality is much less for the first than for subsequent attacks), (3) severity of clinical manifestations (higher mortality for severely ill patients) and (4) electrocardiographic appearances (according to Conner and Holt [39] the patients who show minimal electrocardiographic abnormalities have a more favorable outlook than those with marked electrocardiographic changes). According to our experience, patients with evidences of posterior infarction have a better prognosis than those with anterior infarction.[40] Hospital statistics may fail to present the complete picture of the disease because (1) some patients die before they can be moved to a hospital, (2) others are too sick to be moved and (3) still others do not regard themselves as sick enough to go. Furthermore, clinical sensitization to the diagnosis, combined with careful electrocardiographic study, will uncover many mild cases in office practice that would otherwise be overlooked.

The course of the patients who survive an acute attack of coronary occlusion is on the whole unfavorable, although every one of experience has a few patients who have done remarkably well. One of the great hazards is the danger of subsequent attacks. Conner and Holt's figures,[39] which indicate that at least 40 per cent of the persons who survived their first attack suffered subsequent attacks, are admittedly inadequate because some patients had died prior to the follow-up study and others could not be traced.

The inevitable result of coronary occlusion is permanent impairment of cardiac function. Many patients never recover sufficiently to return to work after the first attack. Each subsequent attack survived causes further crippling. Conner and Holt found that at the end of five years only 15 per cent of their patients could be regarded as well and at the end of ten years only 3.4 per cent. The results reported by Willius [41] seem a little better, but he was dealing with a selected group.

TREATMENT

In the early stages of the attack the two conditions that may urgently require treatment are intolerable pain and circulatory collapse. For the pain, nitrites are usually useless and may be dangerous. Hypodermic injections of morphine or other opiates are required. Although morphine is not to be spared so long as pain is severe, overdosing may increase the hazard by depressing respiration. The relief of flatulence, the application of heat or counterirritation to the chest and the administration of oxygen are measures sometimes helpful in relieving pain.

In the treatment of circulatory collapse many physicians inject such drugs as caffeine, atropine, digitalis or one of the various proprietary preparations highly recommended by their manufacturers. None of these drugs have more than dubious value; most are useless. Epinephrine may be dangerous. The patient should be kept warm by such measures as the use of hot water bags and blankets. If alarming failure of the circulation occurs, an intravenous injection of from 20 to 40 cc. of 50 per cent dextrose may be given slowly from time to time. Fluid and sweetened drinks given freely by mouth at this stage may start vomiting. It is best to give them in small and limited amounts. An oxygen tent may be helpful. Venesection seems to be a two edged sword, and the indications for its use are not yet clear.

Smith, Rathe and Paul [42] advised that the administration of theophylline be instituted promptly after coronary occlusion and continued for a long time. Although there is a good theoretical indication for its use, there is considerable doubt as to how much it

36. Wolferth, C. C., and Wood, F. C.: The Differential Diagnosis of Coronary Occlusion: Difficulties from the Electrocardiographic Standpoint, M. Clin. North America **18**: 219 (July) 1934.
37. Hochrein, Max, and Schneyer, Klaus: Das Schicksal des Myokardinfarktes, Ztschr. f. Kreislaufforsch. **28**: 257 (April 15) 1936.
38. Master, A. M.; Jaffe, H. L., and Dack, Simon: The Treatment and Immediate Prognosis of Coronary Artery Thrombosis (267 Attacks), Am. Heart J. **12**: 549 (Nov.) 1936.
39. Conner, L. A., and Holt, Evelyn: The Subsequent Course and Prognosis in Coronary Thrombosis: Analysis of 287 Cases, Am. Heart J. **5**: 705 (Aug.) 1930.
40. Wood, F. C.; Bellet, Samuel; McMillan, T. M., and Wolferth, C. C.: Electrocardiographic Study of Coronary Occlusion, Arch. Int. Med. **52**: 752 (Nov.) 1933.
41. Willius, F. A.: Life Expectancy in Coronary Thrombosis, J. A. M. A. **106**: 1890 (May 30) 1936.
42. Smith, F. M.; Rathe, H. W., and Paul, W. D.: Theophylline in the Treatment of Disease of the Coronary Arteries, Arch. Int. Med. **56**: 1250 (Dec.) 1935.

helps. Given intravenously, it is said to stop acute pain in some patients. The recent studies by Starr, Gamble, Margolies, Donal and Joseph [43] suggest that it is one of the most powerful of heart stimulants. Stimulation may be desirable in certain cases and not in others. Quinidine sulfate has been advised in the early stages in doses of 0.1 Gm. twice a day [44] up to 0.2 Gm. three times a day [45] in the hope of preventing paroxysmal ventricular tachycardia or ventricular fibrillation.

Digitalis may properly be used in the treatment of paroxysmal auricular fibrillation if it persists for many hours or appears to be adding to serious heart failure. Mild grades of congestive failure do not require digitalis. When given it should be administered much more cautiously than in the treatment of other types of congestive failure. Bellet, Johnston and Schecter [46] showed that, in dogs after the production of infarction, digitalis was less well tolerated than in normal controls. McMillan and Bellet [47] have shown that in patients with severe coronary disease, digitalis in full doses may be dangerous.

Most writers emphasize the importance of a diet small in bulk and consisting of easily digestible foods during the acute stage. As a matter of fact, many patients desire little or no food at all during this stage. Master, Jaffe and Dack [38] recommended a prolonged regimen of a low caloric diet and undernutrition, believing that it lessens the work of the heart without decreasing its efficiency and that mortality is thereby lowered.

All observers appear to agree on a minimum of from four to six weeks in bed for patients who do well and a much longer period for those who do not convalesce smoothly. The principle of rest should be continued after the patient leaves his bed. I attempt to keep even those who do best away from work for at least three months and have them begin on a part time basis with as many holidays as possible. Others should be restricted for even longer periods. There is good reason to believe that a long period of rest permits the heart to recover reserve strength much better than a short rest period and thus postpones or averts the occurrence of subsequent failure.

Little is known as to how to prevent recurrent attacks. My impression is that the patients who are willing to lead their lives on a restricted plane, avoiding severe physical and mental strains, being careful in their habits of eating, drinking and relaxation and obtaining abundant rest, do better than patients who are unwilling to submit to restraint. It has also seemed to me that those who stop entirely the use of tobacco get along better. However, whether this is due to the fact that tobacco is harmful to patients with coronary disease or to the fact that those who stop the use of tobacco are more careful in other respects would be difficult to decide.

Interesting new developments are the application of surgical procedures to the treatment of coronary disease. Total thyroidectomy has been recommended for certain types of angina pectoris and heart failure.[48] More recently, attempts have been made to improve collateral coronary circulation by surgical procedures.[49] Whether either of these developments wins for itself a definite place in the treatment of coronary disease remains to be decided in the future.

43. Starr, Isaac; Gamble, C. J.; Margolies, Alexander; Donal, J. C., and Joseph, N.: A Clinical Study of the Action of Commonly Used Drugs on the Heart and Circulation, to be published.
44. Hochrein, Max: Richtlinien fur die Behandlung des Myokardinfarktes, München. med. Wchnschr. **82**: 1515 (Sept. 20) 1935.
45. Levine, S. A.: The Treatment of Acute Coronary Thrombosis, J. A. M. A. **99**: 1737 (Nov. 19) 1932.
46. Bellet, Samuel; Johnston, C. G., and Schecter, A.: Effect of Cardiac Infarction on Tolerance of Dogs to Digitalis: Experimental Study, Arch. Int. Med. **54**: 509 (Oct.) 1934.
47. Bellet, Samuel, and McMillan, T. M.: The Tolerance to Digitalis of Normals and Patients with Various Types of Heart Disease, Am. Heart J., to be published.

SUMMARY

The concepts of acute coronary occlusion chiefly emphasized in this discussion are the following:

1. The disease is one of the major causes of death after the fourth decade. There is no evidence on which to decide whether its frequency is increasing.
2. Little is known regarding its fundamental etiologic factors. Certain definite relationships to age, sex, race, diabetes mellitus and hypertension have been discovered. The influence of heredity, habits of life, occupation, physical and mental strain, or overwork, have been much discussed but have not been clearly demonstrated.
3. The evidence at hand suggests that collateral coronary circulation is not active in normal hearts and apparently develops only when there is need for it. The course of events after coronary occlusion, particularly the occurrence of myocardial infarction, depends on such factors as the size and position of the vessel obstructed, the rapidity of development of occlusion and the integrity of the adjacent circulation.
4. Acute coronary occlusion is usually an accident in the course of coronary arteriosclerosis.
5. Progress in the technic of electrocardiography has recently been made and the diagnostic value of this procedure enhanced.
6. Combined clinical and electrocardiographic study is valuable.
7. There is a wide range in the figures obtained by various workers for mortality during attacks. Statistics show that, among patients who survive attacks, excellent recovery is the exception rather than the rule. The hazard of cardiac deterioration, subsequent attacks or both is great.

Thirty-Sixth and Spruce streets.

48. Blumgart, H. L.; Levine, S. A., and Berlin, D. D.: Congestive Heart Failure and Angina Pectoris: Therapeutic Effect of Thyroidectomy on Patients without Clinical or Pathologic Evidence of Thyroid Toxicity, Arch. Int. Med. **51**: 866 (June) 1933.
49. Beck, C. S., and Feil, H.: The Consideration of the Artificial Development of Collateral Coronary Circulation by Surgical Means, Modern Concepts of Cardiovascular Disease, vol. 6, No. 6, June 1937.

Invention, Communication and Social Habituation.—Before naming or discussing these three basic processes which characterize man, let us point out that these depend in turn upon three structural evolutionary changes which occurred either simultaneously or in very close succession, namely, the assuming of the upright position when man became a ground, rather than an arboreal, animal, the development of language, vocal organ apparatus and the spurt in the growth of the great forebrain. The upright position freed the forelimbs, making possible the growth and development of manual activity, the utilization of primitive tools, in fact the sum total of all that we call *invention*, and invention is the first great noninherited basic process that has made civilization and culture possible. The growth of language from its primitive symbolism to its present complexity made possible *communication*, the second major basic process, and the development of these two in association and integration, along with the new brain growth and intelligence brought about *social habituation* (Warden), the greatest of all biological and cultural characteristics, possessed by no lower animal except in its most rudimentary form. All that we gain by *invention* can be passed on by *communication* to be utilized by others in successive generations for social adaptation.—Lewis, Nolan D.: The Position of the Occupational Therapist in a Plan of Research in Schizophrenia, *Psychiatric Quart.* **11**:539 (Oct.) 1937.

CORONARY DISEASE IN YOUTH

COMPARISON OF 100 PATIENTS UNDER 40 WITH 300 PERSONS PAST 80

R. EARLE GLENDY, M.D.
SAMUEL A. LEVINE, M.D.
AND
PAUL D. WHITE, M.D.
BOSTON

It has become apparent in recent years that atherosclerosis, particularly of the coronary arteries, can no longer be regarded as the natural result of old age or as a medical curiosity when it occurs in the early decades of life. It is no longer rare in practice to encounter men under 40 who have fallen victim to disease of the coronary arteries, as manifested by coronary thrombosis or uncomplicated angina pectoris or both, long before they have reached the peak of their usefulness.

It seems important, therefore, to determine how frequently serious coronary disease attacks persons in youth and early middle age and what its clinical characteristics in such persons may be. Furthermore, if clues are to be discovered that may aid in its prevention or disclose any underlying causative factors, exclusive of the aging process, the younger patients must be studied carefully.

It was with these thoughts in mind that we began our investigations nearly three years ago. During the intervening time we have been able to collect from various sources [1] material on 100 patients under 40 with coronary disease, and from a considerable number of these patients, by means of a questionnaire, we have obtained certain data regarding their manner of living. In addition we have assembled data on the mode of life of 300 persons living at ages past 80, the assumption being that persons who have attained such advanced ages constitute a highly selected group whose vital organs and functions have been much better than those of the average man. On the other hand, the younger group are marked because of the premature occurrence of serious heart disease which has until recently been regarded as the result of old age. The clinical analysis of the young group and the comparison in the manner of living of the two groups form the basis of this paper. A preliminary report was published in 1935.[2] So far as we have discovered, no one has as yet reported a comparison of these two groups.

LITERATURE

Among reports of cases of coronary disease published in the literature we found a considerable number on patients under 40, usually incorporated in studies covering all age groups. It has been difficult to determine from these reports just what the actual incidence of coronary diseases is in the third and fourth decades of life. Lack of space will not permit the lengthy review of the literature, which will appear in the reprints of this paper.

For centuries the subject of longevity has engaged the interest of medical and nonmedical observers the world over. Most of the earlier works on longevity are concerned chiefly with the tabulation of lists of aged folk, observations on their remarkable abilities, and philosophical writings. Recorded among these are such startling instances of longevity as that of Henry Jenkins, a Yorkshireman, who is said to have died in 1670 at the age of 169, having assisted, when a boy, in conveying arrows to Flodden Field at the battle which was fought 158 years previously.[27]

More systematic and scientific observations on longevity began to appear in the latter part of the nineteenth century, of which Humphrey's [27] monograph on "Old Age" is a good example.

In recent years Pearl and Dublin and their associates [28] have made many valuable observations on the biology and diseases of senescence and the factors influencing longevity in this country.

DEFINITION OF CORONARY DISEASE

Atherosclerosis with a variable amount of fibrosis is the main problem in coronary disease in youth and middle age.[29] Evident infectious lesions of importance are rare and embolism is still rarer.

Disease of the coronary arteries was recognized in this study by the occurrence of coronary thrombosis, the diagnosis of which is usually easy, angina pectoris without any evidence of syphilis, valvular disease, thyrotoxicosis, severe anemia or congenital defects, and by the finding of characteristic electrocardiographic changes, which demand careful analysis, particularly in young persons. Furthermore, when the diagnosis of angina pectoris was made it was inferred that significant atheromatous changes were present in the coronary arteries and that the patient was subject to sudden death or to attacks of coronary thrombosis. A careful attempt was made to select only cases of uncomplicated coronary disease.

MATERIAL

It became evident soon after this study began that coronary disease under the age of 40 occurs so infrequently in the experience of any one clinic or individual as to make the compilation of data from such sources of limited value. Therefore, after exhausting the possibilities of our own private practice we turned to the various large hospitals in Boston and appealed to individual physicians for suitable cases. In this way 100 cases of undoubted coronary disease occurring under the age of 40 were assembled according to the diagnostic criteria listed. Cases were at once excluded when there was the slightest question as to the diagnosis or when the possibility of a complicating factor seemed to enter into the picture. Table 1 shows the ages and sex distribution in these cases.

From the Cardiac Clinic and Laboratory of the Massachusetts General Hospital.

Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints.

A large part of the material for this paper was assembled while Dr. Glendy was Dalton Scholar at the Massachusetts General Hospital, 1934-1935.

Read before the Section on Practice of Medicine at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

1. The following hospitals and individual physicians in Boston cooperated, making possible the collection of data on such a large series of young patients with coronary disease: the Peter Bent Brigham Hospital, the Boston City Hospital, the Beth Israel Hospital, and Drs. H. B. Sprague, Louis Wolff, H. B. Levine, Sylvester McGinn, R. B. King, A. G. Brailey, R. S. Palmer, Jacob Lerman and Alfred Kranes.

2. White, P. D.: Coronary Disease and Coronary Thrombosis in Youth: An Analysis of 4 Cases Under the Age of 30 Years, 21 Cases Under the Age of 40 Years, and 138 Cases Under the Age of 50 Years, J. M. Soc. New Jersey **32**: 596 (Oct.) 1935.

27. Humphrey, G. M.: Old Age, Cambridge, Macmillan and Bowes, 1889, p. 33; quotation from Philosophical Transactions, XIX, 266.

28. (*a*) Pearl, Raymond: Studies on Human Longevity: I. A Note on the Inheritance of Duration of Life in Man, Am. J. Hyg. **2**: 229 (May) 1922; (*b*) II. Preliminary Account of an Investigation of Factors Influencing Longevity, J. A. M. A. **82**: 259 (Jan. 26) 1924; (*c*) III. Longevity: A Pedigree, Human Biol. **3**: 133 (Feb.) 1931; (*d*) IV. The Inheritance of Longevity, ibid. **3**: 245 (May) 1931; (*e*) V. Constitutional Factors in Mortality at Advanced Ages (with Raenkham, T.), ibid. **4**: 80 (Feb.) 1932; (*f*) VI. The Distribution and Correlation of Variation in the Total Immediate Ancestral Longevity of Nonagenarians and Centenarians, in Relation to the Inheritance Factor in Duration of Life (with Pearl, Ruth De W.), ibid. **6**: 98 (Feb.) 1934. (*g*) Dublin, L. I., and Lotka, A. J.: Length of Life: A Study of the Life Table, New York, Ronald Press Company, 1936.

29. Leary, Timothy: Experimental Atherosclerosis in the Rabbit Compared with Human (Coronary) Atherosclerosis, Arch. Path. **17**: 453 (April) 1934.

For comparison with the young group with coronary disease, data were assembled on 300 persons living past the age of 80. These people were chosen primarily for their longevity, and such factors as race (except that they are all white), geographic or residential location and other factors which may or may not influence long life were not taken into consideration. Their names were obtained from newspaper clippings, various directories, lay and professional associates and the old folks themselves, who were glad to give us in turn the names of aged friends or relatives.

TABLE 1.—*Ages and Sex Distribution of 100 Patients Under 40 with Coronary Disease* *

Age at Onset	Men	Women	Total
35-39	72	3	75
30-34	17	0	17
20-29	7	1	8
	96	4	100

* Average age: men 35.7, women 33.2, entire series 35.6.

Information was obtained from all the older group and from the majority of the survivors in the young group by means of an extensive questionnaire, too lengthy for publication here. It is fashioned for the most part after the questionnaire used by Pearl [28f] in his studies of longevity but is more detailed, particularly regarding diet and personal habits and hygiene. Answers to the various questions yielded information from both groups about their birthplace, racial stock, place of residence, occupations, ancestral, family and marital history, use of tobacco and alcohol, exercise, nervous sensitivity and strain, dietary habits, hygiene, body build and past history of infections and operations. The results of this study are given in an analysis to follow later.

ANALYSIS OF 100 CASES OF CORONARY DISEASE OCCURRING UNDER THE AGE OF 40

The diagnosis of coronary thrombosis was established clinically in seventy-eight cases of the present series, with postmortem confirmation in ten; seventy patients had angina pectoris; forty-nine had both conditions. Twenty-nine had coronary thrombosis without angina pectoris and twenty-one angina pectoris without coronary thrombosis. One patient had neither angina pectoris nor clinically evident coronary thrombosis but showed electrocardiographic evidence of serious coronary disease.

Incidence.—Fifty-two of the total of 100 patients were from our own private practice. They were observed among a total of 3,376 patients with disease of the coronary arteries. This makes an incidence of 1.54 per cent.

It must be kept in mind that this figure represents only a selected group of persons who sought medical advice because of symptoms or signs relating to the heart. The true incidence of coronary disease in the young and the old in the community can be determined only by careful examination, including electrocardiography, of thousands of persons unselected except that they include farmers, laborers, business and professional men and housewives. Such a survey should be done in various parts of the world.

Clinical Features.—The clinical characteristics of coronary disease under the age of 40 differ very little from the disease as it is generally encountered. There are, however, certain striking exceptions.

Sex Incidence: The most outstanding exception is the overwhelming preponderance of men over women. Ordinarily in patients with coronary disease three or four men are seen to one woman, but the preponderance of men over women in the young group is twenty-four to one. This contrast makes one think that whatever the factors are underlying the development of coronary disease they must be working with unusual force in these young men, whether they are hereditary influences, the effect of urban life, the use of tobacco or other conditions.

Hypertension: The incidence of hypertension was relatively much lower in the young group than in persons of all ages with coronary disease. Hypertension was considered to be present if the systolic blood pressure measured 160 mm. of mercury or more or the diastolic pressure 110 mm. or more. The incidence of hypertension in our series was 16.6 per cent for ninety-six patients whose blood pressure was known, whereas in a group of all ages reported by White and Bland [30] the incidence was 36.4 per cent in 500 patients with angina pectoris and 25 per cent in 200 patients with coronary thrombosis. Of additional interest is the fact that three of the four women with coronary disease under the age of 40 had hypertension. Only thirteen of ninety-two men (12.5 per cent) had hypertension. This is in agreement with our own observations and those of others [31] that coronary disease in women under the age of 50 in the absence of hypertension is uncommon. Forty-four per cent of the young group with hypertension are dead. This figure is only slightly higher than the percentage mortality for the entire group (36 per cent) at the present time but indicates that the presence of hypertension may have a slightly unfavorable influence on the duration of life.

Diabetes and Buerger's Disease: Diabetes was present in only two cases of the present series and Buerger's disease in an equal number.

Size of the Heart: Cardiac enlargement was present in 37 per cent of our young group. The size of the heart was questionable in 9 per cent and normal in 54 per cent. In the series of 500 patients with angina pectoris and 200 patients with coronary thrombosis reported by White and Bland, 63 per cent of the former and 74 per cent of the latter had cardiac enlargement. It is apparent from these figures that considerably more of the young group have hearts that are normal in size.

TABLE 2.—*Ages and Sex Distribution of 300 Persons Over 80* *

Age	Men†	Women	Total
100 or more	12	16	28
90-99	51	37	88
80-89	127	57	184
	190	110	300

* Average age: men 87.5, women 89.2, entire series 88.3.
† The manner of selection no doubt accounts for the preponderance of men.

Electrocardiographic Observations: In general the electrocardiographic appearances were much the same as for older patients with coronary disease.

Cardiac Neurosis: Cardiac neurosis is frequently encountered in patients with coronary disease, par-

30. White, P. D., and Bland, E. F.: A Further Report on the Prognosis of Angina Pectoris and of Coronary Thrombosis: A Study of 500 Cases of the Former Condition and 200 Cases of the Latter, Am. Heart J. **7**: 1 (Oct.) 1931.
31. Levy, Hyman, and Boas, E. P.: Coronary Artery Disease in Women, J. A. M. A. **107**: 97 (July) 1936.

ticularly those who fall victim to the disease in early life. We have called attention to this subject in two recent communications.[32]

Prognosis.—When we come to consider the prognosis of coronary disease in early life we find it just as difficult and as uncertain as every student of coronary disease has found it in the past. Naturally one would expect a youthful person, other things being equal, to withstand any disease process with fewer complications and for a longer time than one of advanced years. To a certain extent this is true of young persons with coronary disease.

Of the 100 patients in our series thirty-six have died and sixty-four are alive. Recent reports were obtained regarding all the patients. Of the thirty-six who died, thirty-three died of cardiac disease, eighteen very suddenly, presumably of coronary thrombosis, and two of congestive failure. Of the remaining three, two died after operations and one of pneumonia. There were only two immediate fatalities; one of the patients lived for seven hours and the other for three days. Both these deaths were due to coronary thrombosis without antecedent symptoms of coronary disease. The remaining patients, both living and dead, survived for periods varying from a few months to twenty years. In contrast to the immediate mortality for coronary thrombosis of 2.6 per cent for our series, Conner and Holt [4] found the immediate mortality for the first attack to be 16.2 per cent for 287 patients of all ages with coronary thrombosis. Although immediate fatality without antecedent evidence of coronary disease was rare in our young group, 50 per cent of the thirty-six deaths which occurred were sudden deaths. The same incidence of sudden death was found by Eppinger and Levine [33] for 141 patients of all ages with angina pectoris. It would appear, therefore, that young patients with coronary disease are just as susceptible to sudden death as any person with coronary disease, although they may live a little longer, as will be shown later. It is also evident from these observations that such patients almost invariably die of heart disease, either angina pectoris (sudden death), subsequent coronary occlusion or congestive heart failure. This fact alone should serve to dispel the skepticism with which the diagnosis of coronary disease in early life has been regarded by some authorities in the past. If additional proof were needed to validate the accuracy of the clinical diagnoses, it is furnished by the finding of gross changes in the coronary arteries of each of our ten patients examined post mortem.

Of the sixty-four patients still living, forty-two are working full time at their usual occupations. One half of this number are free from symptoms; the other half continue to have mild anginal distress. Nine patients are able to work only part time on account of angina pectoris; seven are totally incapacitated for work because of severe angina pectoris; one is unable to work because of congestive failure and five have not yet attempted normal activity since recent attacks of coronary thrombosis.

When we consider coronary disease under the age of 40 regardless of the nature of onset or clinical course (table 3), the prognosis is better by two and one-half years than in the average case of coronary thrombosis and nearly the same as in the average case of angina pectoris. For coronary disease under the age of 30 the average duration of life of those who have died and of the survivors (seven and four-tenths years) far exceeds the average period of survival in any age group regardless of the clinical manifestations.

TABLE 3.—*Longevity in Coronary Disease in Early Life and at All Ages*

	Number of Cases	Percentage Mortality at Time of Last Follow-Up	Average Number of Years from Onset to Death	Average Number of Years from Onset, Survivors	Average for Series
Coronary disease under 40 regardless of nature of onset or clinical course	100	36	4.0 (36 cases)	5.2 (64 cases)	4.7
Coronary disease under 30	8	25	9.0 (2 cases)	6.9 (6 cases)	7.4
Coronary thrombosis					
Patients under 40 (present series)	78	30	3.6 (23 cases)	4.5 (55 cases)	4.3
Patients of all ages (White and Bland, 1931)	195	52	1.5 (101 cases)	3.2 (94 cases)	2.4
Angina pectoris					
Patients under 40 (present series)*	70	34	5.2 (24 cases)	5.2 (46 cases)	5.2
Patients of all ages (White and Bland, 1931)†	486	44	4.4 (213 cases)	5.1 (273 cases)	4.9
Coronary disease under 40, further analysis‡	100				
Angina pectoris without coronary thrombosis§	21	53	5.4 (11 cases)	7.4 (10 cases)	6.4
Coronary thrombosis without angina pectoris	29	34	1.8 (10 cases)	4.5 (19 cases)	3.6
Coronary thrombosis and angina pectoris combined	49	27	5.0 (13 cases)	4.6 (36 cases)	4.7
A. Angina pectoris first	26	27	5.7 (7 cases)	5.1 (19 cases)	5.3
B. Coronary thrombosis first	23	26	4.3 (6 cases)	4.1 (17 cases)	4.1

* 70 per cent of this number have had coronary thrombosis.
† 25 per cent of this number have had coronary thrombosis.
‡ One patient had only electrocardiographic evidence of coronary disease.
§ 82 per cent of the deaths were sudden.

It is also seen from table 3 that, in general, the average duration of life from onset to death and the elapsed time from the onset of symptoms in the survivors is greater for our young group with coronary thrombosis and angina pectoris than for similar groups of all ages reported by White and Bland. The accumulation of material for our young series has taken place over a longer period, and much of it has come under observation since the publication of White and Bland's figures. The two series are therefore not strictly comparable as to time relationships. Nevertheless, we find the comparisons of percentage mortality and duration of survival for the living and the dead in the two series useful and of interest.

For the young group with coronary thrombosis who have died the period of survival from onset to death (3.6 years) is nearly two and one-half times as great as for the group of all ages (1.5 years), a better figure, to be sure, but still not very encouraging. The average duration from the onset of symptoms for the survivors (4.5 years) is also greater for the young group by more than a year than for the group of all ages (3.2 years). This gives an average duration of life of 4.3 years for the entire but uncompleted series of 100 young people with coronary disease as contrasted with an average of 2.4 years for 195 patients

32. Glendy, R. E., and White, P. D.: The Recognition and Treatment of Cardiac Neurosis, M. Clin. North America **21**: 449 (March) 1937; The Growing Importance of Cardiac Neurosis, Ann. Int. Med. **10**: 1624 (May) 1937.

33. Eppinger, E. C., and Levine, S. A.: Angina Pectoris: Some Clinical Considerations, with Special Reference to Prognosis, Arch. Int. Med. **53**: 120 (Jan.) 1934.

of all ages. This does not mean, however, that it is any advantage to have coronary disease in youth.

In comparing angina pectoris in early life with the condition at all ages, one finds that the prognosis as expressed in years is only slightly better for the younger patients. For those who have died the average duration of life from onset to death was 5.2 years, as compared with 4.4 years for persons of all ages. The average duration from the onset of symptoms for the survivors was 5.2 years for the younger group and 5.1 years for the group of all ages. The averages for both series were 5.2 years and 4.9 years, respectively. The reason that the younger patients with angina did not live any longer than the average for the group of all ages is that so many of the former (70 per cent) had attacks of coronary thrombosis whereas only 25 per cent of the latter suffered from this complication.

In subdividing the patients with coronary disease under the age of 40 for further analysis, one sees, from table 3, that twenty-one had angina pectoris without evident coronary thrombosis during the period of clinical observation. Although the percentage mortality to date for this group has been high (53 per cent) and the deaths frequently sudden, the patients have lived longer (average, 6.4 years for the entire series) than any other group except the eight under 30, who have lived an average of 7.4 years.

Coronary thrombosis uncomplicated by angina pectoris occurred in twenty-nine cases (37 per cent of seventy-eight cases of coronary thrombosis). This figure seems unusually high and, if borne out by subsequent observations, would appear to afford one of the exceptions in the manifestations of coronary disease as we usually see it. According to our experience it is comparatively uncommon in the general run of cases to find absence of anginal distress after coronary thrombosis. In reviewing the clinical history of the young patients, however, one finds that quite a number, particularly among those who had coronary thrombosis in the twenties, are normally active without symptoms and that a few even engage strenuously in such sports as tennis, squash and swimming with no harmful effects. This may be explained in part by the ability of the coronary circulation in early life to regain an adequate function after an insult such as coronary thrombosis; but this observation is offset somewhat by the fact that the average duration of life from onset to death, for ten patients in this group who have died, is only slightly longer (1.8 years) than for patients of all ages with coronary thrombosis (1.5 years). The duration from the onset of symptoms for the survivors is 4.5 years, and the average for the entire twenty-nine patients is 3.6 years.

Coronary thrombosis and angina pectoris combined were present in forty-nine of our series of 100 cases. From our figures it appears that the combination of the two affords a better prognosis than coronary thrombosis without angina pectoris and that patients who have angina pectoris before coronary thrombosis live slightly longer than those of whom the reverse is true. To be sure we are dealing with a relatively small number of cases, which may account in part for this unexpected finding, but it is possible that the presence of angina pectoris as a constant warning signal may act to make the patient lead a more exemplary life and therefore improve his prognosis.

Postmortem Examination.—The ten patients who were examined post mortem all showed more or less atheromatous degeneration, with a variable amount of fibrosis, and partial or total occlusion of the left coronary artery or one of its main branches. The right coronary artery showed only slight atheromatous changes with two exceptions, and in both these cases advanced changes were present with thrombosis and myocardial infarction.

It is apparent from the foregoing observations that degenerative changes of a remarkable degree do exist in the coronary arteries at relatively early ages. A detailed account of the changes characteristic of coronary disease in early life is found in the work of Leary.[29]

COMPARISON OF 300 PERSONS LIVING AT AGES PAST 80 WITH 100 PERSONS UNDER 40 WITH CORONARY DISEASE

When we turn to our series of 300 healthy old men and women and compare them in race, ancestral longevity, residence, occupation, exercise, diet, use of tobacco and alcohol and past history of infections with the group of 100 patients with coronary disease under the age of 40 we find only a few prominent differences, and these we must not unduly emphasize until information from many more cases is available.

There is neither time nor space here for the many tables used in the compilation of our data. They have therefore been omitted. To persons who want more detailed information we shall be glad to furnish it by personal communication. When percentages are given, unless otherwise stated, they apply to the entire series of 300 old folks or 100 young patients with coronary disease, as the case may be.

Race Stock.—Relatively far more (90 per cent) of the old group, 80, 90 and 100 years old, than of the young group with coronary disease are of British stock. This is probably the result of our method of selection and of other factors, such as time of immigration. Only 44 per cent of the young group are of British stock, 39 per cent are Jewish (mostly Russian born) and the remaining few are largely of Italian, Syrian or Greek stock. The incidence of coronary disease in young Jewish people as shown here demonstrates once more the high degree of vascular vulnerability in this race. However, the method of selection of the young group may have resulted in a somewhat higher incidence of Jewish people. Among those scattered cases occurring at various hospitals and under the care of individual physicians it has been impossible to make an accurate determination of the racial incidence of coronary disease. However, in the private practice of two of us the incidence of Jewish persons is 17.5 per cent and 62 per cent respectively; Jewish patients of all ages comprise 19 per cent and 37 per cent respectively, and those under 40 number 31 per cent and 59 per cent respectively of all cases of coronary disease. Therefore, in confirmation of our figure of 39 per cent Jewish patients among the young coronary cases, it is significant that in early life the percentage of Jewish patients with coronary disease exceeds by far the number encountered in the later decades of life.

Ancestral Longevity.—It has been known for a long time that heredity, among other things, has an important rôle in bringing about long life and that to have long-lived ancestors is desirable. Our series of old folks bear this out once more.

Our data regarding the longevity of fathers and mothers of members of both groups is striking. The average at death of the fathers of the old folks (70.8 years) was higher by nine years than the figure for the young group (61.8 years), and for the mothers of

the old folks the average age at death (71.4 years) was greater by fourteen years than the figure for the young group (57.2 years). The mothers of the old people outlived the fathers on an average of less than a year, whereas for the young group the reverse is true but the difference in average ages is more striking, the fathers living nearly five years longer. This agrees with the previous observations of Eppinger and Levine [33] on persons with angina pectoris. They suggested that the defect of vascular vulnerability is transmitted more prominently by the female than by the male parent.

Place of Residence.—The majority of the old group (70 per cent) have resided in small towns, villages or the country, in contrast to the young group, whose residence has been almost wholly (82 per cent of ninety-two persons) in large cities.

Life tables for 1930 compiled by the Metropolitan Life Insurance Company [34] regarding the expectation of life at specified ages show that the life of the rural dweller in the United States is, on the average, four or five years longer than that of the urban resident. In 1901 the average was approximately nine years longer for the rural resident. Industrialization, with a shift in population, has no doubt been responsible for this changing mortality. It is apparent therefore that the majority of our young patients with coronary disease are handicapped to the extent of four or five years from the very outset.

Occupation.—Slightly more than half of the old men were professional (30 per cent) or business (23 per cent) men, and the remainder (47 per cent) were of the so-called working class (e. g., farmers, carpenters and mechanics). About three fourths of the young men were professional (19 per cent) or business (50 per cent) men or otherwise engaged in some sedentary work (8 per cent). The remaining fourth were artisans. None were farmers. The number who designated themselves as day laborers was quite small in both series.

The women in both groups were predominantly houseworkers, with the exception of a few unmarried ones who in their earlier years worked as teachers or seamstresses and later as housekeepers. The four women in the young group were all housewives.

Exercise.—As for exercise, there is a wide difference in the two groups. Ninety-one per cent of the old group had exercised considerably to well beyond middle life and many of them, particularly those who had worked hard outdoors, were still moderately active. One man of 86 reported skating several miles daily during the winter when the river was frozen over. Fifty-two per cent of sixty-seven of the young group were sedentary in habit and exercised very little; 31 per cent exercised moderately and 16 per cent much. A considerable number of the young group had been strenuously active in athletics in their younger days, but only a few continued to exercise regularly. The types of occupations in which these young persons are engaged perhaps account in part for their habits of exercise. Long hours and confining work leave them little free time for adequate exercise, so important in maintaining a good state of health.

Diet.—The older group claims to have eaten more moderately than the younger group, but here a difficulty arises in that a man past 80 whose diet is almost always frugal may have forgotten an enormous appetite present in youth. However, when we take into consideration the higher proportion of heavy-set or fat persons in the young group as compared with the old group in early life, the chances are that the young group have in fact eaten more heartily.

Of late it has been suggested that certain foods rich in cholesterol, chiefly eggs, milk and butter, eaten in adult life in excess may be a factor in the production of atherosclerosis.[29] It is true of our two series that eggs and milk were consumed in somewhat greater quantity and with greater regularity by the young patients with coronary disease than by the old folks, but many of the aged who are still well and active stated that they had consumed eggs and milk regularly every day for most of their lives.

Our data, therefore, do not permit us to draw any definite conclusions regarding diet in the production of coronary disease, although further study may show that, as with diabetes, it is the combination of faulty metabolism plus faulty diet that is important.

Use of Tobacco.—Owing to the almost total abstinence from tobacco and alcohol by the women, only men are considered in this comparison and the one to follow.

Although a fair number of the old folks (43 per cent) used tobacco moderately, there were far more total abstainers (44.2 per cent) than in the young group (6.7 per cent of eighty-eight persons) and far fewer heavy users of tobacco in the old group (4.2 per cent) than in the young group (58 per cent of eighty-eight persons). Including the occasional users of tobacco, 55.8 per cent of the old group were smokers and 44.2 per cent nonsmokers, but in the young group 93.3 per cent were smokers and 6.7 per cent nonsmokers.

This striking difference between the two groups in the use of tobacco is of interest, and the young group affords an exception to the observations reported in 1934 by White and Sharber [35] on a series of 750 patients of all ages with angina pectoris compared with a series of 750 persons without angina pectoris of the same ages, proportion of sexes and walks of life, which showed relatively little difference in their past use of tobacco, with few exceptions. It would appear now that the younger patients with coronary disease (angina pectoris) may fall among the exceptions.

Alcohol.—In the use of alcohol the differences between the old folks and the young group are far less striking than in the use of tobacco. Nearly 50 per cent of the old group were total abstainers from alcohol, in contrast to 30 per cent in the young group. The occasional, moderate and heavy users of alcohol were slightly greater in number in the young group. Among the old men 83.7 per cent were total abstainers or occasional users of alcohol, in contrast to 74.8 per cent in the young group. The opinion, held by many, that alcohol may act as a prophylactic in the prevention of arteriosclerosis is neither disputed nor confirmed by these figures.

History of Infections.—When we come to the history of infections it is surprising to discover that with the exception of diphtheria and pneumonia the older group suffered considerably more from severe infections than did the younger.

It would appear therefore that infections do not have an important rôle in the early production of coronary disease.

Body Build, Nervous Sensitiveness and Strain.—The characteristic habitus of 83 per cent of the old group in early life was average or thin and lean, 15 per

34. Rural versus Urban Longevity, Metropolitan Life Insurance Company Statistical Bull. **16**: 1 (July) 1935.

35. White, P. D., and Sharber, Trimble: Tobacco, Alcohol and Angina Pectoris, J. A. M. A. **102**: 655 (March 3) 1934.

cent were heavy set and only 2 per cent distinctly fat. In contrast, nearly 70 per cent of seventy-eight patients in the young group were robust in stature and more than one third of these were distinctly fat. Approximately 25 per cent of seventy-eight patients in the young group were of average build, and a few were thin and lean.

Nervous sensitiveness and nerve strain were considerably greater in the younger group and practically negligible in the older group. No doubt this is due to the fact that the young people were almost wholly urban dwellers and subject to the strenuous competition and other stresses of modern life in a large city. Racial factors may also enter here.

SUMMARY AND CONCLUSIONS

Approximately 1.7 per cent of all coronary disease occurs in persons under 40. The ratio of men to women is 24:1, which is about six times greater than is generally encountered. Hypertension is less common than in persons of all ages with coronary disease, but was present in a high proportion of the women (three out of four) in the young group. Its influence on the prognosis is slightly unfavorable. Considerably more of the young people (54 per cent) than of the patients of all ages with coronary disease have hearts that are normal in size. In general the electrocardiographic observations were much the same for the young as for older patients, with perhaps fewer permanent or serious conduction defects. Such conditions as diabetes and thrombo-angiitis obliterans were relatively uncommon. Cardiac neurosis was fairly common as a complication.

The prognosis of coronary disease in early life is just as difficult and as uncertain as every student of coronary disease has found it at any age. Of the 100 patients in our series thirty-six have died and sixty-four are alive. There were only two immediate fatalities, both from coronary thrombosis. Of the thirty-six who died, thirty-three died of cardiac disease; eighteen died very suddenly, thirteen of evident coronary thrombosis and two of congestive heart failure. Of the sixty-four patients still living, forty-two are working full time. The remainder are partially or totally disabled because of cardiac symptoms (chiefly angina pectoris). The prognosis of coronary disease under the age of 40, regardless of the nature of onset or the clinical course, is better by two and one-half years than in the average case of coronary thrombosis and nearly the same as in the average case of angina pectoris. For coronary disease under the age of 30, the average duration of life of those who have died and of the survivors (7.4 years) far exceeds the average period of survival for any other group regardless of the clinical manifestations.

In comparing coronary thrombosis in youth and at all ages one finds that the average period of survival is 4.3 years for the former and 2.4 years for the latter, both living and dead. The same comparison of angina pectoris in youth and at all ages shows the difference to be very slight, the period being 5.2 years for the former and 4.9 years for the latter. This is accounted for by the much greater incidence of coronary thrombosis in the young group with angina pectoris. The average period of survival for persons with angina pectoris alone in early life (6.4 years) is better than for persons with coronary thrombosis alone (3.6 years), but it would appear from our figures that the combination of the two diseases affords a better prognosis (4.7 years) than coronary thrombosis alone and that persons who have angina pectoris before coronary thrombosis live slightly longer (5.3 years) than those of whom the reverse is true (4.1 years).

A comparison of the mode of life of our 100 patients with coronary disease with that of 300 persons living at ages past 80 revealed a few prominent differences, but these must not be emphasized until information from many more cases is available. Relatively far more (90 per cent) of the old folks than of the young group with coronary disease were of British stock, but here selection and other factors, such as time of immigration, may well enter. There were no persons of Jewish extraction in the older group, whereas 39 per cent of the young group were Jewish. Long-lived ancestors were more common to the aged group. However, it is of interest that the fathers of the younger group who died outlived the mothers by an average of five years. This relationship is usually reversed by several years. The majority of the old group have resided in small towns, villages or the country, in contrast to the young group, whose residence has been almost wholly urban. The younger group consisted largely of business or professional men. Among the old folks the occupations requiring physical activity were more common. A large number of the old group had exercised considerably to well beyond middle life. The young group were for the most part sedentary in habit and exercised very little.

The older group claimed to have eaten more moderately and perhaps more sparingly of such cholesterol-containing foods as milk and eggs. Tobacco was used in greater quantity and by a greater number in the young group, the incidence of smokers being 93 per cent, which exceeds even the high incidence in the general population. The use of alcohol differs less widely for the two groups. There were slightly more total abstainers in the old group and few heavy drinkers in either group. With rare exceptions a history of serious infections (e. g., smallpox, typhoid fever and malaria) was much more common in the older group. A greater proportion of the older group were exemplary in their sleeping habits, and fewer of them were constipated. Nearly 70 per cent of the young group were robust in build or distinctly fat, whereas 83 per cent of the old folks were of average build or had been thin and lean for most of their lives. Nervous sensitivity and strain were frequently encountered in the young group but practically negligible in the older group.

We may therefore draw the following conclusions regarding coronary disease in the early decades of life: Men are overwhelmingly the victims. Hypertension as an important factor is predominant in women. A greater number of young patients than of patients in general may be expected to have hearts that are normal in size. There are fewer complications, and diabetes or evident peripheral vascular disease is uncommon. The duration of life for those who died and the life expectancy of the survivors is greater than for patients of all ages with coronary disease, but the susceptibility to sudden death is just as great. Inheritance and ancestral longevity are important factors in the early occurrence of coronary disease. Racial factors no doubt are also of importance in view of the high incidence of Jewish people in our series of 100 patients. Urban life, sedentary occupations and habits, possibly excesses of diet, the excessive use of tobacco, overweight and increased nervous sensitivity and strain all appear to be more predominant on the part of young patients with coronary disease than on

the part of persons who have achieved long life. Alcohol and serious infections do not seem to play an important rôle.

Although we still have much to learn about the underlying cause or causes of coronary disease, this study has afforded certain clues which offer a challenge to us and to those who follow to pursue this important and interesting subject to its final solution.

12 Bay State Road.

ABSTRACT OF DISCUSSION

DR. H. M. MARVIN, New Haven, Conn.: This excellent contribution is most important because it demonstrates clearly that coronary arterial disease in young people is not a rare condition. I have seen a moderate number of cases of coronary thrombosis in young people in their thirties and I think that without exception the physicians in charge had considered this diagnosis, only to reject it because of their belief that the patients were too young. Surely the time has come to emphasize that coronary arteriosclerosis may occur, literally, from infancy onward and is not particularly uncommon after the age of 30. Although it seems to me important that physicians should be familiar with this conception, I wish to comment briefly on the extraordinary infrequency of angina pectoris in young women. Coronary thrombosis is a relatively easy diagnosis to make, because it rests in most cases on demonstrable, abnormal, objective observations. The diagnosis of angina pectoris, on the contrary, rests exclusively on the history given by the patient, and a history suggestive of angina pectoris in young women should be received with great skepticism. As a matter of fact, one almost never receives from these young women a history that is wholly typical. They may have pain which is typical in its location, duration or radiation. If it is typical in these respects it is apt to occur in the absence of the usual provocative factors, namely, exertion and emotional excitement, or it may be unresponsive to glyceryl trinitrate or may be associated with dyspnea or with some other symptoms that are not a part of the recognized anginal syndrome. Drs. Glendy, Levine and White have not had opportunity to refer to the recent work of Winternitz and his collaborators at New Haven. Those who have had the opportunity to hear Dr. Winternitz's inspiring and convincing talk, and to see his amazing collection of photographs and drawings, will agree with me that he has demonstrated the extreme importance in this connection of hemorrhages in the vessel wall. I believe that this represents a vital contribution, probably the most important of recent years, to the pathogenesis of the condition.

DR. W. D. STROUD, Philadelphia: While working with Sir James Mackenzie in St. Andrews in 1920, I remember he used to say the age of 40 was the danger line. According to him, if a patient over 40 complains of symptoms suggesting cardiovascular disease, it is necessary for the physician to be absolutely positive nothing is wrong with the heart before he might assure the patient his symptoms were not cardiovascular. If the patient was under 40 years of age, the physician must be very sure there was some definite evidence of organic cardiovascular disease before he was justified in making a heart diagnosis. This paper is most timely, since Sir James's ideas have become popular. Now it is known a patient even in his twenties may have coronary disease. In the records of the five hospitals of which I am cardiologist, the youngest patient so far definitely diagnosed as having coronary thrombosis is a Jew of 28. Dr. Wolferth tells me there has been no younger patient in the records of the University of Pennsylvania Hospital.

DR. PAUL D. WHITE, Boston: I want to say just a word about the electrocardiogram in these young people, something that we didn't have time to take up in detail. Dr. Glendy and I had obtained twenty-nine cases from our own practice, Dr. Levine helped us with twenty-three more, and the rest of the 100 cases were from scattered hospitals and physicians in Boston. To be on the safe side at the present time, we made the diagnosis of coronary disease in this group on the basis of clinical evidence in ninety-nine of the cases; that is, there was either certain coronary thrombosis or certain angina pectoris of coronary arteriosclerotic origin. Only one of the 100 cases was diagnosed on the basis of the electrocardiogram alone. In other words, we erred on the safe side. I am perfectly certain that a good many other patients, especially young people, have only electrocardiographic evidence of coronary disease. As we study this problem further, we shall be making the diagnosis probably more often on the basis of the electrocardiogram alone. But we must be very cautious not to diagnose coronary disease on very slight changes in the electrocardiogram. There is now a danger of overdiagnosis if we aren't careful. We may swing so far in this direction that we may establish still more strongly the cardiac neurosis that is becoming common. Finally, a word about tobacco and coronary disease, a problem of ever current interest. Some years ago Dr. Sharber and I reported a series of 750 patients with coronary disease and compared them with 750 control individuals of the same sex and age incidence without coronary disease. We found that there was very little difference in the use of tobacco or alcohol in these two groups. We did make the statement then, which we would confirm now, that occasional individuals have a definite sensitiveness to tobacco and, owing to increased blood pressure, increased heart rate, or other effects, have an increase of angina pectoris as a result of the overuse of tobacco. In this study of young persons we found a high incidence of the heavy use of tobacco, in contrast to the old persons. But I myself am already old enough to remember the days in Sunday school when I was told that tobacco was the devil's own invention and that to smoke cigarets was not only putting nails in my coffin but also sacrilegious. Nowadays the parsons of the country smoke about as much as anybody else, and therefore, naturally, tobacco is much more used at the present time by young people than by these older persons, with whom we have compared them, when they were young sixty or seventy years ago. We must bear that in mind before drawing any conclusions.

THE TREATMENT OF CORONARY SCLEROSIS AND ANGINA PECTORIS

BY PRODUCING A NEW BLOOD SUPPLY TO THE HEART

HAROLD FEIL, M.D.
AND
CLAUDE S. BECK, M.D.
CLEVELAND

This report concerns the results obtained in the treatment of coronary artery sclerosis and intractable angina by grafting vascularized tissues on the heart. Up to the present time we have done this operation on twenty-five patients. A sufficiently long interval of time has elapsed since operation so that we can begin to evaluate the clinical results of this operation.

The experimental basis for this operation has been published.[1] The anatomic arrangement of the heart and pericardium deserves some comment. Unlike any other organ, the heart is actually anchored in the body. It is anchored by the great veins and arteries and also by some fat, lymphatics and nerves that lie between these vessels. The fat at the base of the heart contains blood vessels that form anastomoses between the coronary arteries and other branches of the aorta, including the internal mammary, pericardial, phrenic, intercostal and esophageal.[2] These anastomoses were

From the departments of Medicine and Surgery of the University Hospitals and the Western Reserve University School of Medicine.

Read before the Section on Pharmacology and Therapeutics at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

1. Beck, C. S., and Tichy, V. L.: The Production of a Collateral Circulation to the Heart: I. An Experimental Study, Am. Heart J. **10**: 849 (Oct.) 1935. Beck, C. S.: The Development of a New Blood Supply to the Heart by Operation, Ann. Surg. **102**: 801 (Nov.) 1935.

2. Hudson, C. L.; Moritz, A. R., and Wearn, J. T.: The Extracardiac Anastomoses of the Coronary Arteries, J. Exper. Med. **56**: 919 (Dec.) 1932. This paper contains references to the literature.

demonstrated by the injection of india ink into the coronary arteries and by following the spread of the injection mass into the mediastinal tissues. Similar communications exist in the dog. In the absence of coronary disease these anastomoses are small, and it is doubtful whether they carry any significant quantity of blood. However, after the coronary arteries have been occluded by placing silver bands around the arteries, these anastomoses definitely increase in size and number, and it appears that these vessels may take on a real compensatory function.[3] It was also shown that adhesions to the heart contain blood vessels that connect with the coronary arteries.[4] India ink injected into the coronary arteries was traced through the adhesions into the pericardium, diaphragm and chest wall. These injection studies were carried out on human hearts that had adhesions from rheumatic heart disease. Similar anastomoses have been demonstrated by experimental studies. After the coronary arteries of a dog were occluded and grafts of skeletal muscle or fat were placed on the myocardium, anastomoses between the coronary arteries and the vessels of the grafts were demonstrated by injection studies.[5]

Do these arterial communications present in basilar fat and in parietal grafts or adhesions actually carry blood? Are they of any real functional value? In the presence of normally patent coronary arteries we do not believe that these anastomoses are of any functional significance. The blood vessels are anatomically present but do not function as anastomotic channels. In the presence of coronary arteries that are becoming occluded we believe that these anastomoses actually carry blood to the heart. That they carry blood was demonstrated by one or two observations made by Beck at operation on the human heart. In an operation for the resection of a compression scar a ribbon-like adhesion was found extending from the left ventricle to the thick pericardial scar. When the adhesion was cut, brisk bleeding occurred and each end of the transected tissue had to be ligated. The blood from the cardiac end of the adhesion came from the coronary arteries because there was no other possible source for it.

Another observation was made in the course of an operation in one of the cases reported in this paper. This patient had coronary artery sclerosis and at operation some mediastinal fat, the pericardium and the left ventricle were sealed together at the site of an infarct. An incision was made in the fat and while this was being done brisk bleeding was encountered. The fat was richly vascularized over the adherent area and the vessels carried blood. Are such extracoronary anastomoses of functional value in the presence of coronary artery occlusion? The clinical results after grafts are placed on the heart will help answer this question, as will also the data obtained by injection studies of the heart and grafts after death. Our report concerns the clinical results of the operation. The injection studies must await the future, because all the patients who withstood the operation and the immediate postoperative period are still living. Perhaps this fact in itself is of significance.

3. Mautz, F. R., and Beck, C. S.: The Augmentation of Collateral Coronary Circulation by Operation, J. Thoracic Surg., to be published.

4. Moritz, A. R.; Hudson, C. L., and Orgain, E. S.: Augmentation of the Extracardiac Anastomoses of the Coronary Arteries Through Pericardial Adhesions, J. Exper. Med. **56**: 927 (Dec.) 1932. This article also contains references to the literature.

5. Beck and Tichy.[1] Beck.[1] Mautz and Beck.[3]

SELECTION OF PATIENTS FOR OPERATION

In selecting the patients for operation the requirements were (1) unequivocal evidence of coronary sclerosis, (2) inability to get along on medical treatment, drugs and rest with any degree of comfort and (3) absence of circulatory failure (with one exception). Hypertension was not regarded as a contraindication. Diabetes mellitus is no contraindication to operation, but it should be well controlled. The age of the patients ranged from 42 to 69 years. None had had recent infarcts. These requirements gave us a group of patients with advanced disease. They were poor risks for any kind of operation but we felt that we should take this group to determine the benefit, if any, that the operation offered. All presented the classic picture of Heberden's angina of effort and of emotion. Most of the patients were relieved by the nitrites, but this therapeutic test is not always diagnostic because of the side effects of the nitrites, headache and vertigo that are occasionally encountered.

SPECIAL STUDIES

Each patient was kept in the hospital for a period of from five to ten days, during which time detailed studies of the physical condition were carried out. These studies consisted of determinations of exercise tolerance, cardiac output, circulation time, roentgenograms of the legs and chest, kymographs of the heart, basal metabolism, blood dextrose, blood urea nitrogen, blood cholesterol, blood uric acid, phenolsulfonphthalein excretion, urea clearance, roentgenograms of the gallbladder and stomach when indicated, vital capacity, and blood Wassermann reaction. The tolerance for exercise was determined by means of the standard two step test. The patient was placed under basal conditions and the pulse rate, arterial pressure, respiratory rate and electrocardiogram were taken. In each instance the patient was free from pain before the test was started. Then the patient climbed the steps at the rate of from twelve to fifteen single trips per minute until a characteristic anginal attack occurred. The patient was then placed at rest and determinations of the pulse rate, arterial pressure and respiratory rate and an electrocardiogram were taken again and repeated after the pain subsided. Also the character of the pain was recorded. Similar exercise tolerance determinations were carried out on another day twenty minutes after the administration by mouth of a one-hundredth grain (0.0006 Gm.) tablet of glyceryl trinitrate. It was suggested by our colleague Dr. Roy Scott that the increase in the tolerance for exercise after glyceryl trinitrate as sometimes observed might give information concerning the degree of sclerosis present in the coronary arteries.

The minute volume output of the heart was measured by means of the Grollman method. The output determinations were within normal limits on each of the patients, and these studies will not be recorded. The arm to tongue circulation time was determined by the intravenous injection of decholin (sodium dehydrocholate). The circulation time is prolonged in cases of cardiac failure and we used this test as a further check on the condition of the circulation. The roentgenograms of the legs were taken to show the condition of the arteries. The renal function tests were made because of the possibility of uremia developing after operation in patients with severe arterial or arteriolar sclerosis. The results of these studies cannot be given in this paper and reference will be made only to the important deviations from normal.

THE BECK OPERATION

The operation consists of grafting vascularized fat and muscle on the heart. Skeletal muscle from the chest wall is readily available. Available fat lies in the mediastinum attached to the pericardium. Subcutaneous fat is also available and experimentally we used omentum brought up through an opening in the diaphragm. In the early operations costal cartilages on each side of the sternum were removed and a large graft of each pectoralis major muscle was applied to the right and left ventricles. The epicardium was removed so that the grafts came into contact with the coronary vessels. The pericardium was roughened so that the pericardial fat receiving its blood supply from extracoronary sources became attached to the myocardium. In the later operations the approach was made only from the left side of the sternum and a graft from the left pectoralis major muscle was used. Powdered beef bone was placed on the surface of the heart to produce a low grade inflammatory reaction between the grafts and the heart. The beneficial effect of procaine applied directly to the heart was worked out by our associate Dr. Frederick R. Mautz, and we now use procaine at operation.[6] In the later cases the mediastinum was drained into the left pleural cavity. This is an important step in the operation and was described by our former associate Dr. R. A. Griswold.[7] Quinidine was used as a routine before operation to reduce the irritability of the heart, and it is used after operation if necessary. We are prepared to defibrillate the ventricles should this complication occur at operation.[8] The patient was placed in an oxygen tent as a routine after operation. The importance of these developments was indicated by the reduction in mortality. In the first twelve patients the mortality was 50 per cent. In the last nine patients the mortality was zero. Even though the patients are bad risks for any operation, we do not believe that the mortality in the future will be high for this operation on the heart.

REPORT OF CASES IN WHICH SURVIVAL OCCURRED

CASE 1.—*Arteriosclerotic heart disease and angina pectoris of nine years' duration, severe for five years; moderate generalized arteriosclerosis with hypertension, arterial pressure systolic 164, diastolic 92 mm. of mercury; moderate chronic pulmonary emphysema.* A man, aged 48, Yugoslavian, a farmer, with gradually diminishing exercise tolerance, finally became incapacitated for any work because of pain. The exercise tolerance test, sixty trips on the steps, brought on precordial pain, fatigue and dyspnea. Operation was done Feb. 13, 1935. Four months later he began to do light work around the hospital as a gardener and made eighty-two trips on the steps without pain but stopped because of dyspnea. The patient has no symptoms at present and considers himself cured. We consider the result in this, the first patient ever to have this operation performed, to be excellent.

CASE 3.—*Arteriosclerotic heart disease and angina pectoris for five years; severe myxedema from total thyroidectomy in 1934.* A business man, aged 51, with severe angina of effort and of emotion, became totally incapacitated. The exercise tolerance test, fifteen trips on the steps, produced complete exhaustion. Operation was done June 28, 1935. The amount of thyroid extract that the patient was able to take without producing pain after operation was two or three times the amount taken before operation. Tolerance for exercise improved only slightly. The patient believes that the operation has lessened the pain a great deal but he remains weak. We believe that this patient has extensive fibrosis of the myocardium.

CASE 4.—*Arteriosclerotic heart disease, coronary sclerosis and angina pectoris of five years' duration; generalized arteriosclerosis, diabetes mellitus.* A surgeon, aged 50, with angina of effort and emotion, was totally incapacitated in December 1932. Subtotal thyroidectomy was done in January 1933. He had a coronary thrombosis in February 1933. The patient had had diabetes mellitus since 1918, requiring insulin. He had had pain in the legs for three years on walking. A roentgenogram of the legs showed calcification of the vessels. The electrocardiogram showed a deep Q_3. Operation was done July 9, 1935. The angina has improved. He can stand emotional strain better. Exercise tolerance has increased from eighteen trips before operation to thirty-two trips at present. The patient is well satisfied with the result.

CASE 6.—*Arteriosclerotic heart disease and angina pectoris for two and one-half years; generalized arteriosclerosis and intermittent claudication.* A machinist, aged 55, had the typical anginal syndrome brought on by exertion or emotion. The symptoms began in April 1933 after a severe attack of pain due to coronary thrombosis. He returned to work but tolerance for exercise progressively decreased, and in March 1935 he became totally incapacitated. The electrocardiograms showed a reversal of T in the chest lead and after exercise there were the typical changes seen in coronary arteriosclerosis. Operation was done August 31. The patient returned to his former job five months after operation. Exercise tolerance increased from twenty-four trips before operation to thirty-seven trips after operation and the patient had to stop the step test not because of anginal pain, as before operation, but because of claudication. Because of these symptoms in his legs the patient changed his job in July 1936 to that of a storekeeper. The patient has no anginal pain, one year and eight months after operation. In this case of generalized arteriosclerosis, and with a remote myocardial infarct, the result is excellent.

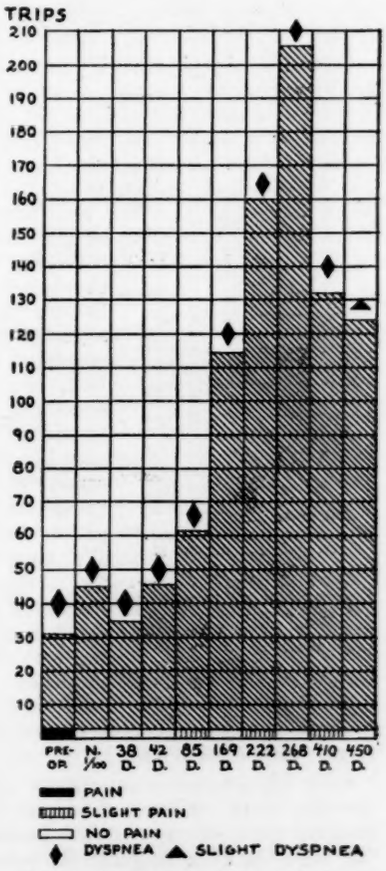


Chart 1 (case 11).—Studies obtained from step test before and after operation. The increase in trip tolerance was 303 per cent.

CASE 9.—*Arteriosclerotic heart disease and angina pectoris for three years and three months.* A painter, aged 45, was forced to reduce his activities and finally was totally unable to work for two years and three months. Angina was produced by seventy trips on the steps, and the electrocardiogram, which at rest was normal, showed characteristic changes in the ST interval. Glyceryl trinitrate increased the exercise tolerance to 102 trips. Operation was done Jan. 2, 1936. A year later he returned to his former work as a painter and

6. Mautz, F. R.: Reduction of Cardiac Irritability by the Epicardial and Systemic Administration of Drugs as a Protection in Cardiac Surgery, J. Thoracic Surg. **5**: 612 (Aug.) 1936.

7. Griswold, R. A.: Chronic Cardiac Compression Due to Constricting Pericarditis; Relief by Pericardiectomy, with a Note on the Value of the Roentgenkymogram, J. A. M. A. **106**: 1054 (March 28) 1936.

8. Mautz, F. R.: Resuscitation of the Heart from Ventricular Fibrillation with Drugs Combined with Electric Shock, Proc. Soc. Exper. Biol. & Med. **36**: 634 (June) 1937. Beck, C. S., and Mautz, F. R.: The Control of the Heart Beat by the Surgeon, with Special Reference to Ventricular Fibrillation, Ann. Surg. **106**: 525 (Dec.) 1937.

was able to do a good day's work with little discomfort. His ability to walk has not increased in proportion to his ability to take other exercise. He can take fifty-two trips on the steps without pain and without glyceryl trinitrate. It has been seventeen months since the operation and the patient has been restored to economic independence. On walking long distances he still has a recurrence of pain, but he has sufficient reserve to enable him to work a full day.

CASE 11.—*Arteriosclerotic heart disease and angina pectoris for sixteen months; probable coronary thrombosis at onset of illness.* A tailor, aged 42, had angina of effort and emotion. He became totally incapacitated. Rest and drugs failed to give relief. Angina was produced by twenty-four trips on the steps. After glyceryl trinitrate he was able to make forty-six trips before anginal pain was felt. The conventional electrocardiogram was normal but T in the chest lead was reversed in direction. Operation was done Feb. 22, 1936. The patient is now able to work. He can tolerate ninety-seven trips on the steps and stops because of dyspnea and not because of pain (chart 1). He is entirely comfortable.

CASE 13.—*Arteriosclerotic heart disease and angina pectoris for eleven years; probable attack of coronary thrombosis six years before admission and another attack seven months before admission; generalized arteriosclerosis and hypertension; early cardiac failure.* A man, aged 58, an accountant, had dyspnea and edema of the ankles, which had appeared recently. The heart was enlarged. The electrocardiogram showed regular sinus rhythm, splintering of QRS in all leads and inversion of T in leads 1 and 2; T in the chest lead was reversed. The circulation time was twenty seconds. Because the patient was showing signs of heart failure, the usual operation was not done. May 25, 1936, one costal cartilage was removed; the pericardial cavity was opened and powdered beef bone was placed in the pericardial cavity. The congestive failure responded to treatment, but four months later the patient died. There was no autopsy. We doubt whether the reaction of the foreign body on the surface of the heart, as produced by the powdered beef bone, was beneficial to this patient. Heart failure definitely precludes this operation for coronary sclerosis. Since the patient did not have the complete operation carried out, he cannot be included in the analysis of results.

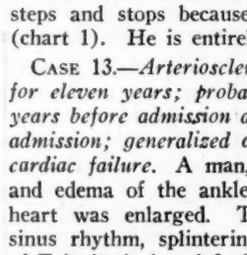


Chart 2 (case 20).—Studies obtained from step test before and after operation. The symbols have the same meaning as in chart 1. The increase in trip tolerance was 68 per cent.

CASE 15.—*Arteriosclerotic heart disease and angina pectoris for five years.* A salesman, aged 48, could not use nitrites because these drugs produced headache. He had restricted his activities to a minimum in order to prevent pain. The electrocardiogram showed inversion of T_2 and displacement of ST in the chest lead beyond the normal limit. The left ventricle was enlarged. Operation was done July 25, 1936. Some improvement followed and the patient returned to work. Exercise tolerance increased from forty-two trips over the steps, before operation, to sixty-one trips ten months later. Up to three months ago the improvement was only slight or moderate, but during the last three months the patient has shown marked improvement. He can do more work and the pain is considerably reduced.

CASE 17.—*Arteriosclerotic heart disease and angina pectoris, myxedema and secondary anemia.* A machinist, aged 50, had a typical history of angina of effort for eighteen months. The basal metabolic rate was minus 30 and the patient took small doses of thyroid. The electrocardiogram revealed a left axis deviation, and QRS of normal voltage; the T was almost iso-electric in all leads, including the chest lead. Operation was done Nov. 18, 1936. Congestive heart failure developed after operation and cleared up with appropriate treatment. Tolerance for exercise increased from thirty-six trips before operation to fifty trips after operation. The dose of thyroid has been increased. The patient definitely feels better than before operation.

CASE 18.—*Arteriosclerotic heart disease with angina pectoris of nine months' duration.* A Greek waiter, aged 48, had been incapacitated from work for six months. The T wave in lead 1 of the electrocardiogram was inverted. In the chest lead it was also reversed. The left ventricle was questionably enlarged. Operation was done Nov. 21, 1936. Congestive heart failure developed after the operation. The patient has shown gradual but slow improvement. He is now working. He takes an occasional tablet of glyceryl trinitrate. Before operation he used five or six tablets daily. Circulation time was twenty-seven seconds and the heart was slightly enlarged to the left. The myocardium has probably been permanently damaged. It is significant that there is less pain.

CASE 19.—*Arteriosclerotic heart disease and angina pectoris of seventeen months' duration.* A coal miner, aged 49, was totally incapacitated during the entire course of his illness. He had severe pain at rest, and morphine was given for the pain. Theophylline with ethylene diamine and glyceryl trinitrate gave no relief. The electrocardiogram showed alterations indicative of a remote posterior and basal infarct. Operation was done Dec. 3, 1936. Marked improvement followed operation, but within the last two months there has been some recurrence of pain. The patient lives in another city and has not returned for study.

CASE 20.—*Arteriosclerotic heart disease and angina pectoris for one year.* A salesman, aged 68, presented the typical symptoms of angina pectoris and became totally incapacitated. There was no episode suggestive of coronary thrombosis. The left ventricle was slightly enlarged. The arterial pressure was 150 systolic, 100 diastolic. Calcification of the peripheral arteries was present. The electrocardiogram showed regular sinus rhythm, left axis deviation Q_1 and Q_2, and a normal chest lead. After exercise the chest lead showed the ST portion sharply elevated (upright deflection positive in value). The circulation time was twenty-five seconds. Operation was done Dec. 5, 1936. The patient became free from pain and discontinued all treatment. His activities are increased (chart 2). The result is excellent. He can walk with comfort and has started to work.

CASE 21.—*Arteriosclerotic heart disease and angina pectoris of five years' duration; mild diabetes mellitus.* A clerk, aged 51, failed to benefit from medical treatment; paravertebral injection with alcohol failed to give relief and he became totally incapacitated from work. The left ventricle was slightly enlarged. The peripheral arteries were calcified. The electrocardiogram was normal at rest but after exercise showed definite alterations from normal. Operation was done Jan. 30, 1937. The patient was much improved following operation. The pain has not completely disappeared but it is less severe. He has returned to work.

CASE 22.—*Arteriosclerotic heart disease and angina pectoris; thrombo-angiitis obliterans.* A cook, aged 42, had angina of effort and emotion for five and one-half years and was incapacitated from his work for two years; he took morphine for the pain. The left foot was cool, and the arterial pulse was not palpable in the left leg. The electrocardiogram showed no significant changes before or after exercise. Operation was done Jan. 30, 1936. He had several anginal attacks in the early postoperative period. Later he showed striking improvement. He is up and about and does not require medication. The interesting question arises whether the disease of the coronary arteries bears any relationship to the thrombo-angiitis obliterans of the leg.

CASE 23.—*Arteriosclerotic heart disease and angina pectoris of seven months' duration.* A molder, aged 49, had a typical history of angina of effort for seven months and had to give up work four months before admission. Medical care with a long rest in bed did not increase his tolerance for exercise. The anginal syndrome was produced by fifty-three step trips, and after glyceryl trinitrate he was able to make ninety trips. Electrocardiographic changes were present during the induced angina. The circulation time was twenty seconds. Operation was done March 6, 1937. The patient states that he has felt better since the operation, but an exercise tolerance test two months after operation showed twenty-eight trips. It is too early to determine the result in this case.

CASE 24.—*Arteriosclerotic heart disease and angina pectoris of five years' duration.* A tailor, aged 50, in November 1933 and again in August 1936 had myocardial infarcts. They were anterior and apical, and posterior and basal. Invalidism followed the second attack and he was barely able to go to his shop. Slight exertion and emotional strain brought on pain. The left ventricle was slightly enlarged. The circulation time was twenty-three seconds. The venous pressure was 15 cm. of physiologic solution of sodium chloride. The patient had extensive myocardial fibrosis and was a doubtful candidate for operation. Operation was done April 9, 1937. At the operation the heart beat was feeble and it was apparent that we were dealing with a seriously damaged muscle. The patient states that he has been greatly relieved from pain following the operation and he is returning to his shop. That the patient went through the operation and reports that he has obtained some relief from pain seems to be significant because we believe that he has a damaged myocardium. A longer period is necessary before we can make a final appraisal of the result in this case.

CASE 25.—*Arteriosclerotic heart disease and angina pectoris of nine years' duration.* A retired salesman, aged 52, had some attacks which were sufficiently severe to have been caused by coronary thrombosis. The conventional electrocardiogram was normal, but T in the chest lead was reversed in direction. The record taken during the induced anginal attack after exercise showed changes suggesting a posterior and basal infarct. Operation was done April 24, 1937. The patient states that there is some improvement, but it is too early to draw conclusions.

COMMENT

Thirteen patients have been observed for five months or longer after the operation. These patients may be divided into three groups, according to the results obtained. In the first group are patients in whom the result was better than we actually could expect to obtain—no pain, no drug therapy and exercise tolerance definitely increased. In this group are three patients: 1, 11 and 20. The second group contains cases with a result such as one might expect to obtain, considering the nature of the disease that is being treated. The patients in this group have pain, but it is less severe; they take occasional medication; the exercise tolerance has been increased. In this group are nine patients: 4, 6, 9, 15, 17, 18, 19, 21 and 22. In the third group is one patient, patient 3, who had some relief of pain and slight increase in exercise tolerance. There were no patients who were not improved by the operation.

Of the twenty-five patients operated on, sixteen are living and nine are dead. Autopsies were done on seven and in each case an advanced degree of coronary occlusion was found. In most cases extensive, permanent damage was present in the myocardium. Eight of the deaths occurred within one week of the operation. Only one patient died after discharge from the hospital and this patient did not have the usual operation done because he was in failure at the time. It is of interest to note that, while the mortality rate in the first twelve patients was 50 per cent, in the last thirteen patients the mortality was 15.4 per cent. The last nine consecutive patients have gone through the operation without mortality. We believe that we can expect a low mortality in the future.

CONCLUSION

We believe that the results obtained by this operation are encouraging. The beneficial effect of the operation may be explained by several possibilities. One of these is an actual increase in arterial blood to the myocardium. The second is a redistribution of blood that passes through the coronary arteries. This is brought about by opening up intercoronary communications by surface trauma, grafts and powdered bone.

The opening of intercoronary communications could explain the early improvement noted by many of the patients. Almost without exception, the patients stated that they felt better eight or ten days after the operation than they did before the operation. This early improvement cannot be explained on the basis of blood from the grafts. A third possible factor to explain the improvement may be based on the interruption of nerve pathways from the heart. It is possible that the nerves lying beneath the epicardium are torn when the epicardium is removed.

We feel that thorough investigation should be given to the operation. The procedure is scientifically sound and its effectiveness will probably be increased by future study.

25 Prospect Avenue N.W.

ABSTRACT OF DISCUSSION

DR. WALLACE M. YATER, Washington, D. C.: I have followed the work of Drs. Feil and Beck and their associates with interest because of the importance of the problem involved and because of the steady progress made since they first began to use their method. I saw one of the patients operated on and observed several patients on whom the operation had been performed. Dr. Beck's method of encouraging the formation of a new blood supply to the myocardium should appeal to all as the most practical method of treatment so far devised for the treatment of coronary arterial sclerosis. Thus far Dr. Beck has used this method only in advanced cases of this disease. When the method comes to be applied to the less advanced cases, it will come to occupy its proper place in the treatment of coronary sclerosis. It is almost too much to expect a great deal from any form of treatment when the myocardium has become seriously impaired morphologically and functionally by extensive fibrosis. As has been demonstrated by Feil and Beck, even in such cases considerable improvement may result, but far greater benefit will undoubtedly occur in less advanced cases. Also, the mortality should be much less when the operation is used in such cases. In this connection the reduction in the magnitude of the operation as originally performed has made the procedure a much more practical one. The immediate relief of pain in some of the cases following operation is difficult to explain, since some time must be required for any significant amount of new blood vessels to invade the myocardium. However, the fact that the relief in these cases lasts for months and possibly years indicates that the effect is much more than psychologic. Strictly speaking, one would expect the improvement to be delayed for a while and then to be progressive up to a certain point. Whatever the mechanism of this immediate improvement, the fact remains that the patients are improved and remain so. Dr. Beck and his associates are very fair in hoping that other groups will now give this treatment a trial in order to help determine its exact value. In this regard I sincerely hope that only those well qualified and willing to devote much thought and time to the work will undertake it, since discredit may result if half-hearted and inefficient work is done, and years may elapse therefore before the operation finds its proper niche in our armamentarium of cardiac therapy. I wish to emphasize the point that the closest cooperation between the internist or cardiologist and the cardiac surgeon is most vital in this work, not only in the selection of cases but during the operation and in the postoperative care of patients.

DR. HERMAN SHUBE, Cleveland: Fourteen months ago I never thought I would be able to face an audience. I am a patient of Dr. Feil's and I have today the advantage of talking as a patient and not as a physician. I do not agree with the last speaker who thinks that the operations in the future will be performed in the early stages of the disease. I think a

patient should get a chance to recover first, repair his myocardium and then, if the angina persists after a year or a year and a half, he has plenty of time to be operated on. In my work on peripheral vascular occlusions I have noticed that sclerotic occlusion was slow in developing. The collateral circulation developed beautifully. If I had a rapid embolus with a retrograde thrombus, the cardiac circulation did not develop properly and the results were not good. I made observations long before I had my coronary accident. Therefore, when the coronary accident took place in my own case I was not much discouraged. I wanted to be operated on but Dr. Feil and Dr. Beck had refused to comply with my wish. I went to Glenn Springs to get cured by the Neuheim baths. I was associated for eight months with nothing else but patients with coronary disease. Two thirds of the patients ought to go back to work after a proper abstinence from work and with proper optimism. I think that occupational therapy is exceptionally good. I believe in a moderate amount of exercise. I believe every muscle does much better if it exercises. A heart muscle is a muscle like any other muscle and it needs exercise, and surely one doesn't have to put one's patients flat on their backs and tell them there is no chance to recover. If the patient is told that he is going to go back to work and he has to go back to work, he will be better off. After having been a few weeks in a certain place where I was taken by my fellow in charge, I found out that by going back to Atlantic City and Cape May, associating with the young people, doing as McKenzie said, listening to a band of music and playing with the waves, I got along a lot better.

DR. ROBERT L. LEVY, New York: Through the kindness of Dr. Beck and Dr. Feil I have had an opportunity of examining carefully two of their patients. One of the striking characteristics of both these men was an amazing optimism, verging on a state of euphoria. They were delighted with the results. Under the fluoroscope it was apparent that, in spite of the pectoral muscle transplants, there was very little diminution in the contractile power of the heart. The excursions appeared normal in extent, or nearly so. This procedure involves several basic principles. In the first place, it appears to be physiologically sound; there is a defect or an impairment in the circulation of an organ and, by surgical means, an attempt is made to increase that circulation. The procedure, in that respect, is in contrast to total thyroidectomy, which has always seemed to me to be physiologically unsound. In the second place, the operation on human beings has an abundant background of experimental work on animals. In the third place, as has already been mentioned, the study of this group of patients is an example of perfect cooperation between the medical man and the surgeon. I should like to ask two questions: First, what is the explanation for the almost immediate relief of discomfort? Why do these patients say, as did the two seen by me, that they have had no recurrence of pain since the day of operation? Second, is there any way of knowing, on the basis of animal experiments—for I believe there have been no postmortem studies in any human cases that have been followed for an appreciable length of time—what happens to the collaterals that are developed? When the transplanted pectoral muscle atrophies, do these collaterals disappear or is there reason for believing that they persist?

DR. CLAUDE S. BECK, Cleveland: The results of this operation speak for themselves. Dr. Feil and I have tried to maintain a detached point of view in evaluating the results, and we are interested only in scientific facts. The patients state that they are improved by the operation. Dr. Feil and I agree with Dr. Levy that some of the patients are really enthusiastic about the operation. The degree of enthusiasm troubles us occasionally because we are just as anxious as other physicians are to deal with facts rather than with emotional reactions. I should like to answer Dr. Levy's question about the blood vessels in the grafts. What happens to the blood vessels after the muscle graft undergoes atrophy, and what happens to them after they have been established for a while? I cannot give a specific answer to this question. It is difficult to settle such problems, even though we have worked on this subject intensively for five years. There are still many things concerning this work that remain to be learned. In view of the fact that we have done nine operations consecutively without a mortality, I feel that we can recommend the operation to patients with coronary disease. It might be of interest that we have done seventeen operations on the human heart without a fatality. Nine of these were for the grafting of a blood supply to the myocardium and eight of them were for the resection of compression scar on the heart. While this is not a record for future work in the surgery of the heart, nevertheless at the present time it means that there need not necessarily be a high mortality in operations on the heart.

DR. HAROLD FEIL, Cleveland: Most of these patients have had very little pain at rest; only with excitement and exercise has pain occurred. Postoperatively they have been kept quiet for from six to eight weeks. Perhaps by that time, if Dr. Beck's experimental data are applicable to man, some collateral circulation has developed. We are not misled by the fact that these patients say they feel well soon after the operation. As far as optimism is concerned, these patients all have had the accepted therapeutic procedures for angina pectoris. In fact, two patients had total thyroidectomies, one patient had a spontaneous myxedema, and one patient had a paravertebral alcohol injection. There were two patients taking morphine for the pain. Neither has taken morphine since the operation. One interesting point I did not mention was that postoperatively the electrocardiographic changes persist. The ST deviations following effort appear, even though there is no pain. This is due perhaps to the permanence of the myocardial scar, unaffected by the increased coronary circulation.

THEELIN THERAPY IN THE PSYCHOSES

EFFECT IN INVOLUTIONAL MELANCHOLIA AND AS AN ADJUVANT IN OTHER MENTAL DISORDERS

C. C. AULT, M.D.
EMMETT F. HOCTOR, M.D.
FARMINGTON, MO.
AND
AUGUST A. WERNER, M.D.
ST. LOUIS

Since the experimental investigation of the effect of theelin (estrone) in involutional melancholia by Werner and his associates [1] in 1934, theelin has been administered to all patients received at Missouri State Hospital No. 4, Farmington, Mo., who had involutional melancholia, and to those whose mental condition was complicated by involutional psychoses. This procedure was not instituted with the hope that the substance would prove to be a panacea for all mental diseases but to alleviate the distressing subjective menopausal symptoms complicating other mental conditions. Frequently these symptoms obscure some other mental illness, making a diagnosis very difficult. In other words, we believe that we receive many patients suffering not only from some other definite psychosis but also from involutional melancholia.

Involutional melancholia per se is considered generally as a distinct clinical entity, and the controlled research previously done with theelin by our group strengthens this contention. Of those patients having involutional melancholia who were treated with theelin during the original experiment [1] at Missouri State Hospital No. 4 in 1934, three additional patients have shown marked improvement and have returned home.

1. Werner, A. A.; Johns, G. A.; Hoctor, E. F.; Ault, C. C.; Kohler, L. H., and Weis, M. W.: Involutional Melancholia, Probable Etiology and Treatment, J. A. M. A. **103**: 13-16 (July 7) 1934. Werner, A. A.; Kohler, L. H.; Ault, C. C., and Hoctor, E. F.: Involutional Melancholia, Probable Etiology and Treatment, Arch. Neurol. & Psychiat. **35**: 1076-1080 (May) 1936.

During the past year larger dosages of theelin have been administered, and we believe that the results obtained are more effective and rapid. During the first month of treatment, from 30,000 to 40,000 international units of theelin in oil was injected, and then the dosages were reduced to conform to the needs of the individual patient. The amount used in the original experiments was approximately 5,000 international units in aqueous solution per month, and we now believe that this smaller dosage was responsible for the delayed response of the original group of patients as compared to those treated in this series. Formerly the average hospitalization was for a period of six months, but it is now rare to have a case of true involutional melancholia require more than three months' hospitalization. Incidentally, there has been no evidence of injurious effects from the theelin used in any of the experiments.

TABLE 1.—*Results of Theelin Therapy in Involutional Melancholia*

Patient	Age	Duration of Treatment, Weeks	Improvement	Period of Time Since Dismissal
1. G. B.	54	4	Slight	Two years
2. H. G.	43	12	Marked	Two years
3. S. G.	42	2	Slight	Nineteen months
4. N. R.	39	22	Marked	One year
5. C. H.	54	8	Marked	Seventeen months
6. R. P.	48	6	Marked	Eighteen months
7. B. S.	42	42	Marked	In hospital
8. J. K.	42	25	Marked	Six months
9. I. B.	40	25	Marked	In hospital
10. F. P.	42	9	Marked	Nine months
11. B. W.	46	4	Marked	Ten months
12. E. S.	41	5	Marked	Three months
13. E. G.	48	4	Moderate	In hospital
14. B. F.	40	8	Marked	Twenty-two months

In the tables the term "improvement" is employed to mean the rehabilitation of the patient in her social life as to personality and capacity for work. All of these patients still in the hospital have been relieved of the distressing symptoms of hypo-ovarianism.

The consensus is that involutional melancholia constitutes between 3 and 4 per cent of all mental disease. In the mental hospitals of Missouri it has usually comprised from 2 to 4 per cent of first admissions. However, it is a well known fact that many women at the climacteric suffer from mild to marked mental aberrations with concomitant physical and mental handicaps, causing a prolonged convalescence of months to years, but for obvious reasons they are never institutionalized. Therefore, administration of estrogenic substances should prove a boon to these women, a relief to their families and an economic benefit to the nation.

ADDITIONAL INVOLUTIONAL PATIENTS TREATED

Since the original experimental work, fourteen additional patients with involutional melancholia have received theelin therapy and eleven of these patients are socially adjusted at home, as is shown in table 1.

All patients have improved and one has been treated for only one month. Three patients showed such rapid improvement that it was impossible to persuade the relatives to let them remain longer, and two were taken out against advice a short time after admission, but most patients who have been dismissed early have continued theelin at home under medical supervision. Follow-up letters have been received at intervals in the majority of cases for from three to six months after dismissal, and only one patient has not continued to improve and she was taken out against advice and undoubtedly the theelin was not continued. So far there has been only one readmission of this group and this patient remained out of the institution only nineteen days, having had treatment for four months. Since her return she has received six months' additional treatment with theelin and has shown marked improvement.

RESULTS OF THEELIN THERAPY IN SCHIZOPHRENIC PATIENTS DURING THE CLIMACTERIC

It is an established fact that involutional melancholia complicates other types of psychoses. We have seen institutionalized patients become more disturbed with the advent of hypo-ovarianism and on the administration of theelin they have quieted down. As has been cited in a previous paper,[2] the stress and strain of the involutional period evolve dormant potentialities of a schizoid personality into a typical case of schizophrenia, and this period of life has been shown to be the exciting factor in the early production of an organic psychosis.

Theelin therapy has been employed in the treatment of patients in the involutional period who had definite symptoms of schizophrenia or cerebral sclerosis. The same dosage was employed as with involutional melancholia, and there have been very few instances in which there has been no noticeable improvement in the mental disturbances. It is believed that in all cases the syndrome of hypo-ovarianism was relieved by the theelin, and in some instances, in which the medication was discontinued or interrupted early in the confusion of transferring the patient to another cottage or ward, the patients have asked for "the shots" to be continued because of the relief they experienced from them.

TABLE 2.—*Results of Theelin Therapy in Schizophrenic Patients During the Climacteric*

Patient	Age	Improvement of Psychosis	Status on Discharge	Time in Months Since Discharge
1. S. S.	37	Marked	Improved	21
2. M. B.	44	Marked	Improved	6
3. A. Z.	44	Marked	Improved	20
4. B. Z.	42	Marked	Improved	10
5. L. H.	41	None	Stationary	13
6. L. B.	46	Marked	In hospital	..
7. E. P.	48	Moderate	In hospital	..
8. K. N.	51	Slight	In hospital	..
9. C. C.	44	Marked	Improved	9
10. L. W.	42	Slight	In hospital	..
11. M. W.	46	Marked	Improved	6
12. R. A.	52	Marked	Improved	10
13. M. J.	43	Slight	In hospital	..
14. L. S.	48	Slight	In hospital	..
15. F. G.	41	Moderate	In hospital	..
16. M. G.	38	Marked	Improved	18
17. E. H.	48	Moderate	In hospital	..
18. M. M.	41	Slight	In hospital	..
19. C. H.	28	Moderate	Improved	2
20. J. P.	52	Marked	Improved	8
21. E. W.	39	Marked	Improved	24
22. E. K.	45	None	In hospital	..

Naturally the length of treatment has varied for a number of reasons, but in those who showed no noticeable remission of their psychotic episode after six months the therapy was discontinued, and it has never been continued longer than one year in a single case.

In table 2 the results of the therapy in twenty-two schizophrenic patients have been tabulated. The average age was 44 years and the means were 52 and 28

2. Werner, Kohler, Ault and Hoctor.[3]

years, the latter patient being the only one suffering from artificial menopause (surgical). The ten patients who made social recoveries were hospitalized for an average period of six months.

RESULTS OF THEELIN THERAPY IN CEREBRAL ARTERIOSCLEROSIS IN THE CLIMACTERIC

Table 3 shows the results of treatment in the organic cases, and naturally these are not very impressive; but the tabulations in both the functional and the organic cases do not depict the true state of affairs. Even the two patients in each group who showed no mental improvement became much more comfortable in the hospital, and the majority became so much better adjusted to hospitalization that they could be moved from the wards for disturbed patients to quiet cottages.

Patient 6 in the schizophrenic group is to be paroled soon, and those who have shown moderate improvement in both groups have spent variable periods of time on parole at home, usually from three to four months.

Other psychoses, such as manic-depressive, psychoneurosis and psychosis with other somatic diseases (thyrotoxicosis, cardiorenal disease and the like) with definite symptoms of involutional melancholia, have been aided in a more rapid improvement or recovery, as the case may be, by the administration of theelin. Six manic-depressive patients have recovered with an aver-

TABLE 3.—*Results of Theelin Therapy in Cerebral Arteriosclerosis in the Climacteric*

Patient	Age	Improvement of Psychosis	Status on Discharge	Time in Months Since Discharge
1. E. P.	56	Moderate	In hospital	..
2. M. S.	44	Moderate	Improved	13
3. E. S.	53	Marked	Improved	7
4. I. B.	53	None	In hospital	..
5. L. K.	51	Moderate	In hospital	..
6. M. M.	53	None	In hospital	..
7. A. M.	51	Slight	In hospital	..
8. E. K.	60	Moderate	In hospital	..
9. M. L.	55	Moderate	In hospital	..
10. A. P.	48	Marked	Improved	17
11. A. C.	56	Slight	In hospital	..
12. L. L.	56	Marked	Improved	29
13. L. F.	50	Marked	Improved	31
14. A. B.	50	Slight	Stationary	25
15. C. S.	47	Slight	In hospital	..

age hospitalization of four months. Only the patients with cardiorenal disease did not recover and they were moderately improved, but all were relieved of the intense depression and nihilistic trends.

CONCLUSIONS

1. For all practical purposes theelin seems to be specific in involutional melancholia, the apparent recovery rate being 92 per cent in our series of cases.

2. Massive doses of from 30,000 to 40,000 international units for the first month of treatment accelerate the recovery rate in involutional melancholia, the hospitalization being reduced to an average period of three months.

3. Theelin is indicated for any woman during the climacteric having disturbing mental aberrations, whether mild or severe.

4. Theelin therapy is efficacious in relieving distressing symptoms of the climacteric in other types of psychoses, many patients being improved to the extent of recovery.

CONGENITAL OCCLUSION OF THE CHOANA

CARL M. ANDERSON, M.D.
ROCHESTER, MINN.

Congenital occlusion of the choana is a comparatively rare developmental anomaly, approximately only 160 cases having been reported since 1830. Only six cases have been seen in the Section on Rhinology of the Mayo Clinic since 1907, and in only one of these cases was the occlusion bilateral.

It is surprising to note that all the patients were in fairly good health, inability to breathe properly through the nose apparently not having been a serious handicap to their normal development. There was no history indicating any hereditary tendency toward development of the condition, and there were no other apparent deformities or asymmetries. None of the patients seen at the clinic had any disease of the ears. Removal of the obstruction in each case restored normal function.

EMBRYOLOGY

The olfactory epithelium arises in embryos of about 4 mm. as paired ectodermal thickenings, olfactory placodes, on the ventrolateral sides of the head. Specimens 8 mm. long (middle of the sixth week) show the margins of each placode elevated about a central pit. Around these olfactory fossae the nose develops. Each first branchial arch forks into a maxillary and mandibular process. Dorsal to the mouth is the frontonasal process of the head. Laterally on the maxillary processes and ventral to the mouth are the mandibular processes. With the appearance of the nasal pits the lower part of the frontonasal process necessarily is subdivided on each side into a lateral and a median nasal process.

The nasal depressions are at first grooves, each bounded mesially by the median nasal processes and laterally by the lateral nasal and maxillary processes. These nasal grooves connect temporarily with the oral cavity. As development proceeds, fusion of the maxillary processes with the median nasal processes converts the nasal grooves into blind pits, opening by primitive anterior nares and separated from the mouth by ectodermal plates. Later, the union of the median nasal process which forms the septum with the lateral nasal process reduces the size of the external nares. The epithelial plates, which separate the nasal fossae from the primitive mouth cavity, become thin membranous structures as the nasal cavities extend backward and by rupturing during the seventh week produce the primitive choana. The front part of the palate is invaded by mesoderm, thereby forming the primitive palate, which differentiates into the lip and the premaxillary palate. The nasal fossa now opens externally through the external nares and communicates internally with the mouth through the primitive choana. As the ventral border of the septum fuses with the palate, it separates the two passages completely. The permanent nasal passages thus consist of the original nasal fossae plus a portion of the primitive mouth cavity, which has been appropriated secondarily by the development of the palate.

About this time the superior maxillary process, which is an offshoot of the process of the mandibular arch,

From the Division of Otolaryngology and Rhinology, the Mayo Clinic. Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.

assumes its rôle in the formation of the permanent mouth and nasal cavities. The palatal processes of the maxilla grow mediad and slightly forward concurrently with the downward and backward growth of the nasal septum, which is thinned out in the process. The growth of the palatal portion of the maxillary processes continues until they meet in the midline, where they fuse firmly with each other, the vomer posteriorly and the septum anteriorly. This fusion completes the formation of the palate and the floor of the nasal cavities.

If one keeps in mind the fact that the floor of the rudimentary nasal cavities was formed by the premaxilla and that the next stage of growth was by backward displacement of the nasal septum, leaving the floor deficient and in contact with the tongue, it becomes apparent that the primitive choanae are not the same structures as the fully formed choanae.

Normally, the choanae are formed by the body of the sphenoid, medial plates of the pterygoid processes, posterior border of the septum, and fusion of the hard and soft palate. The most popular theory as to the cause of congenital absence of the choana appears to be (1) persistence of the nasobuccal membrane, (2) persistence of the buccopharyngeal membrane and (3) overgrowth of the vertical and horizontal processes of the maxillae. When the atresia is membranous, the probability is that it is caused by persistence of the nasobuccal membrane. When the occlusion is bony, there seems to be some uncertainty as to its origin. The bone forming the obstruction has been shown to be formed from cartilage, which would indicate that it probably was formed from persistence of the buccopharyngeal membrane.

Should primitive choanae dorsal to the primitive palate not form during the process of development, the epithelial lining of the primitive nasal fossa and the epithelial lining of the primitive oral cavity would remain intact, each separated from the other by the thinned-out mesenchymal floor of the early nasal fossae. The continued dorsal growth of the nasal fossae into the mesenchymal mass of the nasofrontal process would ultimately, in cases of maximal growth, lead to a condition in which the epithelium of the nasal fossae would come in contact with the epithelium of the foregut; that is, the nasal portion of the pharynx with a variable amount of mesenchymal tissue between the epithelial surfaces. This would result in blind-ending nasal fossae dorsally. If the amount of mesenchyma between the pharyngeal and the nasal epithelium should remain thick, an osseous atresia would ultimately be formed.

SYMPTOMS

The symptoms of choanal obstruction are quite apparent and consist of inability to breathe through one or both nostrils and the accumulation of thick mucus in the occluded nostril, which can be removed only by wiping or stooping forward. When only one nostril is obstructed, the symptoms are of course much milder. In the new-born there is an inability to nurse, and a tendency to suffocation and cyanosis, especially during the act of swallowing, during sleep and when the mouth is closed, which symptoms can easily be confused with the syndrome caused by enlargement of the thymus.

Several writers have called attention to the fact that congenital occlusion of the choana probably is an unrecognized cause of infant mortality much more often than the literature on the subject would indicate. In nearly all the cases of choanal occlusion reported patients have survived the first few years of life, so there can be little doubt that if the condition was recognized at birth or during the first few days of life, many more cases would have been reported. In the first case of choanal occlusion to be found in the literature, reported by Otto in 1830, the condition was discovered at necropsy. In Stewart's [1] report of the cases of two sisters with congenital bilateral atresia he called attention to one other member of the family who had died in early infancy probably because the condition was not recognized. A few cases have been reported when the atresia was discovered early and the infant's life saved by relief of the obstruction.

REVIEW OF THE LITERATURE

In 1859 Luschka [2] reported the case of a 7 year old boy in good health who had bilateral bony occlusion and complete obstruction of both choanae. At birth there had been great difficulty in maintaining his life; he had not been able to nurse and his mouth had to be kept open to permit breathing. He was sent to Carl Emmert for surgical treatment, as the latter had had some previous experience with the condition, having reported a case of choanal occlusion in 1851.

Ronaldson [3] in 1880 reported a case of bilateral membranous choanal occlusion which he had encountered in his obstetric practice. After delivery he noted that, on attempting to inspire, the child's lungs were not inflated; when the child was held up, however, the mouth was opened and free respiration took place. After removing a mucous plug on each side, he discovered a dense membrane completely closing the choanae; unfortunately he delayed operation and the child died an hour later. He stated in his discussion that breaking down of the membranes should not be delayed, and he suggested the alternative of a gag, to prevent closure of the mouth, or tracheotomy.

Hubbell [4] in 1886 reviewed all published reports of cases up to that time, totaling seventeen in all. Of these, occlusion was complete in both nostrils in eight cases, complete in the right nostril in four, and complete in the left nostril in three; occlusion was incomplete in both nostrils in one case and in the left nostril in one case. The occlusion was bony in twelve cases, membranous in five. Hubbell found the first case reported, which has been mentioned previously, to be that reported by Adolph Wilhelm Otto of Breslau in 1830, and he stated that Otto had implied that other such cases had been seen previously. According to Hubbell's review, Carl Emmert was the first to report a case in which operation was performed for relief of the condition. Hubbell reported a case of his own, in which the patient was operated on with a hand drill, 13 mm. in diameter, and obtained complete relief; the opening later contracted, however, making a secondary operation necessary, at which time tubes were placed in the nose and left for seven weeks, with eventual complete and permanent relief. Hubbell did not mention any deformity of the hard palate but called attention to the fact that there had never been any disturbance in hearing and that the eustachian tubes, tympanic cavities and tympanic membranes were normal in all

1. Stewart, J. P.: Congenital Atresia of the Posterior Nares, Arch. Otolaryng. **13**: 570-583 (April) 1931.
2. Luschka, H.: Ueber angeborene Atresie der Choanen, Virchows Arch. f. path. Anat. **18**: 168-170, 1860.
3. Ronaldson, T. R.: Note on a Case of Congenital Closure of the Posterior Nares, Edinburgh M. J. **26**: 1035, 1880-1881.
4. Hubbell, A. A.: Congenital Occlusion of the Posterior Nares, Tr. New York M. A. **3**: 244-256, 1886.

respects although the conditions of Toynbee's experiment were constantly present.

In explanation of this phenomenon, I would suggest that in the case of an individual with congenital occlusion the act of swallowing must be done without the aid of nasal respiration, and that it is therefore through necessity and early training accomplished in somewhat modified form from the normal, whereas in Toynbee's experiment the nostrils and mouth are tightly closed during the act of swallowing.

Clark [5] called attention to the fact that, owing to the rarity of congenital choanal occlusion, it might not be of much practical interest to the physician but that there was no doubt that infants might die from want of knowledge on the part of the family doctor, obstetrician or pediatrician of the possibility of the existence of such an abnormality. Clark could find in the literature only three cases of complete choanal occlusion from 1886, the date of Hubbell's article reporting seventeen cases, up to 1897; he added one of his own, making twenty-one in all. He did not include any cases in which there was only partial occlusion in one or both nostrils but referred only to complete bilateral occlusion. Operation in his case was by means of an electric trephine, making an opening 11 by 13 mm. in each nostril. The results ten years after operation were good.

Fraser [6] in 1910 reported one case in which he was able to secure a specimen at postmortem examination. The patient had died from meningitis secondary to chronic otitis media in the left ear. The right choana was occluded. The right drum was normal and there had been normal hearing on the right side. The nasal septum was deviated to the right. The sinuses were clear. Fraser's specimen revealed that the two antrums were of some size, and he called attention to the fact that this was against the theory of Freis that development of the nasal accessory sinuses results from the presence of air currents in the nose. Fraser stated: "On microscopic examination the nasal mucosa of the left olfactory region showed normal appearance, whereas that of the right olfactory region showed almost complete desquamation of the surface epithelium and fibrous thickening of the submucous tissue. There was also on the right side considerable small cell infiltration especially of the deeper layers of the submucosa. The mucous membrane of both maxillary antrums was normal." In a review of the literature Fraser found a report of 115 cases of choanal occlusion, but some of these cases were not sufficiently described. Out of the 108 cases that were described, in forty the occlusion was bilateral, in thirty-six on the right side, and in thirty-two on the left side. The occlusion was bony in eighty-nine cases, membranous in ten. In nine cases the type of obstruction was not stated.

In many cases of choanal atresia there are changes in the middle ear. In Fraser's case, for example, the ear on the obstructed side was normal, whereas that on the other side was the seat of chronic otitis media.

White [7] stated in 1919 that the main difficulty in operations for bony occlusion of the posterior nares has been that of obtaining a permanent opening. He reported two cases, one of a man, aged 50, with obstruction on the right side, the other of a girl, aged 18 years, with bilateral bony occlusion but normal drum membranes. He stated that approximately 150 cases had been reported up to 1919.

In 1921 Kirby [8] reported two cases of choanal occlusion, in one of which he made the diagnosis while examining the nose with a probe. Submucous resection was performed first and the bony obstruction was then removed through this route. After removal of the obstruction Kirby made a flap from the membrane at the base of the pharyngeal side of the choana, thus covering a portion of the operative surface. Rubber tubes were placed to maintain the opening. He noted that the ear drum was retracted and that there was also a band of tissue covering the orifice of the eustachian tube. A test of hearing revealed catarrhal deafness, the degree of which was not stated. No mention was made of the condition of the hearing in the second case, the same surgical procedure being instituted as in the first case.

Out of 27,863 patients with diseases of the nose and paranasal sinuses who registered in the ear, nose and throat department of the Royal Infirmary of Edinburgh, under A. Logan Turner and J. S. Fraser, only six cases of unilateral atresia of the choana were found. These were reported by Stewart [1] in 1931 in connection with two cases of complete bilateral atresia which came to his attention at the Deaconess Hospital. Both patients, who were sisters, were operated on with good results. One brother had died in infancy apparently from unrecognized bilateral complete choanal obstruction. Stewart called attention to the fact that growth of the palatal processes of the maxilla mediad is apparently not influenced by either the breaking down or retention of the nasobuccal membrane. Cleft palate results when the nasobuccal membrane does break down. Apparently no atresia of the choana results when the hard palate does not consist entirely of bone. Stewart believed that more cases would be found if infants thus afflicted lived beyond the first day or two of life.

Roth and Geiger [9] in 1926 reported one case of bony occlusion of the right choana.

Grove [10] reported one case of complete bony occlusion on the right side. The obstructing tissue was punctured with a chisel and the edges were bitten away with a sphenoid rongeur until the opening measured 1 cm. by 1.5 cm. A rubber tube was left in place for five days and was then changed at intervals of three or four days thereafter for two weeks. The ultimate result was very good.

Stinson [11] reported two cases in 1932, one of bilateral and one of unilateral atresia. In one of his cases there was marked asymmetry of the face, with encroachment of the lateral wall of the nasopharynx on the choana. At operation, part of the vomer was removed with the choanal obstruction, thus draining the right nostril into the left side. There was no difficulty with hearing.

Culver [12] reviewed one case in which the patient was operated on in 1918 at the age of 2 years and 8 months. The case was reported at the American Laryngological,

5. Clark, J. P.: Complete Congenital Occlusion of the Posterior Nares: Report of a Case, Boston M. J. **138**:171-174 (Feb. 24) 1898.

6. Fraser, J. S.: Congenital Atresia of the Choanae, Brit. M. J. **2**: 1698-1701 (Nov. 26) 1910.

7. White, E. E.: An Operation for Bony Occlusion of the Posterior Nares, Boston M. J. **180**: 153-159 (Feb. 6) 1919.

8. Kirby, J. C.: Cases of Postnasal Choanae Malformation by Bony Occlusion, Laryngoscope **31**:701-703 (Sept.) 1921.

9. Roth, J. H., and Geiger, C. W.: Congenital Osseous Occlusion of the Posterior Choanae: Report of Case, Ann. Otol., Rhin. & Laryng. **35**: 849-855 (Sept.) 1926.

10. Grove, R. C.: Congenital Atresia of the Right Posterior Naris, Virginia M. Month. **60**: 682-684 (Feb.) 1934.

11. Stinson, W. D.: Osseous Atresia of the Posterior Choanae, Arch. Otolaryng. **15**: 101-103 (Jan.) 1932.

12. Culver, B. N.: Congenital Choanal Atresia: Two Cases of Complete Bilateral Obstruction, read before the Western Section of the American Laryngological, Rhinological and Otological Society, Jan. 31, 1937.

Rhinological and Otological Society in 1920. A portion of the posterior edge of the septum was removed along with the obstruction in the choanae. The obstruction had been noted at birth, but nothing was done to correct it until the child was past 2½ years old. At the age of 21 the patient was breathing normally but had not developed normally, either physically or mentally.

Culver [12] added another case, of an infant 6 days old, seen in 1934. The patient was suffering from typical cyclic dyspnea, was unable to nurse, and had to be fed with a medicine dropper. The diagnosis was made by air pressure from a rubber bulb and by introduction of a guarded applicator. Nineteen days after birth an operation was performed to relieve the obstruction. A flap of mucous membrane was turned back laterally and a portion of the mucous membrane on the septum was retracted forward. A protector was placed in the nasopharynx. With a small Alexander mastoid gouge the bony obstruction was perforated and reamed out to normal size. A small portion of the septum was removed. Rubber tubes were placed in the nose, extended through the choanae and left in place several days.

REPORT OF CASES

CASE 1.—A man, aged 35, came to the clinic with the history of never having been able to breathe through the left side of his nose. Examination revealed a wide deflection of the septum to the left with a great deal of mucus back of this deflection. Jan. 19, 1920, with the patient under local anesthesia, submucous resection was performed. When the deflection was removed it was discovered that there was a complete bony occlusion of the choana on the left side. This was removed from between the septal membranes, and the membranes over the posterior nares were cut away with forceps. A pack was placed in the left side and brought out through the right side. There was complete relief of symptoms and the patient has remained well since.

CASE 2.—A boy, aged 14 months, was brought to the clinic because of inability to breath through his left nostril. Examination revealed that the left side of his nose was filled with mucus; the membranes were boggy and dark gray. The adenoid pad and the occluding membrane had been removed previously elsewhere. The patient was operated on again at the clinic Oct. 21, 1930, the membranous occlusion being completely removed with biting forceps. He was completely relieved and has remained well since.

CASE 3.—A girl, aged 11 years, was unable to breathe through her nose. She had undergone adenoidectomy when only 11 months old and was operated on again for the same condition at the age of 3 years. Four years later tonsillectomy and adenoidectomy were performed, but without relief. The patient was subsequently treated for sinus infection, and attending physicians at that time stated that she had a bony growth in her nose. Examination at the clinic revealed membrano-osseous occlusion of both choanae, with a small opening on each side near the top. June 8, 1927, with the patient under oil-ether anesthesia, the obstruction was removed by means of chisel, forceps and bur. A large catheter was placed on each side and left in place for about ten days. The result was very good, the patient having had no trouble since.

CASE 4.—A boy, aged 14 years, complained of inability to breathe through the right side of his nose. On examination the anterior end of the right inferior turbinate was found to be very large. Aug. 18, 1930, with the patient under local anesthesia, the enlargement of the turbinate was removed. The nostril was found to be filled with mucus and, when this was removed, complete bony occlusion was discovered. There was also a large bony spur into the nostril from the sphenoid. The spur and bony occlusion were removed with a chisel. A specimen of the bony occlusion measured about 5 mm. in thickness. The patient has had no trouble with his breathing since that time.

CASE 5.—A boy, aged 8 years, was brought to the clinic with the history of having been unable to breathe through his nose since birth. The physician in attendance at birth stated that he had opened the choana during the first week of life but the obstruction reformed. The patient's general health was good. July 17, 1935, with the patient under intratracheal gas anesthesia, the tonsils and adenoids were removed and the obstructing membrane was removed at the same time with biting forceps. A large tube was placed in the nose. Recovery was complete and permanent.

CASE 6.—A woman, aged 33, came to the clinic stating that since birth she had been unable to breathe through the right side of her nose. At the age of 14 years, turbinectomy had been performed without relief. On examination at the clinic the right nostril was found to be filled with thick mucus. The membranes were congested and dark gray, and appeared to be inactive and boggy. Owing to previous removal of the turbinate, a clear view of the posterior end of the nostril was obtained after removal of the accumulated mucus and it was apparent at once that there was complete occlusion of the choana. A probe revealed dense bone throughout. May 28, 1936, with the patient under intratracheal gas anesthesia, the thick bony obstruction was perforated with a trephine. Through this opening a modified Kerrison punch was passed and the edges were taken down until all were on a level with the surrounding structures, after which all roughness of the edges was smoothed off with a fine rasp. No packing or tubes were used. After four days the nostril was cleaned daily with a suction cannula over a period of one week. The patient was dismissed on the tenth day and has reported recently that she has had no trouble since dismissal.

SUMMARY

While congenital obstruction of the choana is a rare condition, it appears that more cases would be found if the condition were recognized more often in infants with nasal obstruction, particularly when the nostrils are filled with glairy mucus. The symptoms of choanal occlusion may be confused with those resulting from an enlarged thymus.

It is interesting to note that an individual may grow to full maturity in relatively good health without a nose or with only half a nose, respiratory function being taken over by the mouth. While some patients with atresia of the choana have some ear trouble, a much larger number have no symptoms referable to the ears. In one case of unilateral obstruction which came to necropsy the paranasal sinuses were found to be equally well developed on the two sides. It is relatively infrequent to find other developmental anomalies in cases of choanal atresia. There is some speech defect in nearly all cases, particularly when both sides are occluded. When the speech defect persists after relief of the nasal obstruction, it is probably due to habits of speech formed early in life.

New [13] has stated that when cleft palates are repaired before the child learns to talk there is usually no speech defect, whereas if they are repaired after the habits of speech are formed there is great difficulty in overcoming such speech defects. It would seem reasonable to assume that this applies as well to speech defects resulting from congenital occlusion of the choana.

In cases in which there is obstruction to breathing through one or both nostrils and a considerable amount of thick mucus is present, one should suspect occlusion of the choana. The obstruction can be permanently relieved by surgical means. Various surgical procedures are described, but the type of operation used should be determined by the needs of the particular case under consideration.

13. New, G. B.: Personal communication to the author.

ABSTRACTS OF DISCUSSION

DR. J. P. SCHAEFFER, Philadelphia: I have been requested to speak on the embryology of this defect. What especially concerns us in the present connection is the congenital atresia of the choanae in otherwise essentially normal oral, nasal and pharyngeal cavities, albeit that atresia of the choanae may be accompanied by other facial defects and arrests. These atresias are amenable to treatment, resulting in the establishment of normal or, at least, satisfactory function. Although there may be other ontogenic and developmental factors underlying this type of atresia of the choanae, my studies both of the defect and of the embryology of the nose and palate lead me to believe that the explanation of the anomalous anatomy under consideration is found in (*a*) the abnormal behavior of the bucconasal membranes and the primitive choanae, (*b*) an inadequate absorption of the floor of the secondary nasal fossae dorsal to the position of the primitive choanae, and (*c*) the degree of dorsal growth of the secondary nasal fossae. At an early time in the human embryo, the nasal fossae are two blindly ending, epithelially lined pouches lodged in the mesenchymal tissue over the primitive oral cavity. The growth of the nasal sacs normally results in a thinning of the floor of the early nasal fossae, so that ultimately the nasal epithelium and the oral epithelium abut dorsad to what later becomes the intermaxillary bone, thus establishing the thin bucconasal membranes. The latter rupture about the thirty-sixth day of embryonic life. This results in the formation of the primitive choanae, the communicating apertures between the primitive nasal fossae and the primitive mouth cavity. Normally the early primary nasal pits expand dorsad over the roof of the mouth behind the primitive choanae, and at the same time there begins an absorption from before back of the floor of the secondary nasal fossae. Concurrently with these changes the palatal shelves of the maxillary processes begin to appear, first directed vertically and extended toward the mouth cavity, later becoming rotated from the vertical and sagittal plane to a horizontal plane. Following this initial stage, the palatal shelves grow mediad and fuse over the tongue in the midsagittal plane. Important in this connection is the fact that the rotation, growth and fusion of the palatal shelves separate the oral cavity from the secondary nasal fossae, and in doing so a goodly portion of the oral cavity is carried to the side of and incorporated with the hindmost portions of the nasal fossae. The expansion of the primitive nasal fossae dorsad into the mesenchyme, the establishment of the primitive choanae by the rupture of the bucconasal membranes, the growth, rotation and fusion of the palatal shelves, and the inclusion on the nasal side of a portion of the mouth cavity lead to an elongation of the nasal fossae anteroposteriorly and the establishment of the definitive choanae at the juncture between the now elongated nasal fossae and the nasal portion of the pharynx.

DR. HARRY P. SCHENCK, Philadelphia: No one sees many of these patients. The only one I was concerned with, an infant of 6 months, had unilateral choanal obstruction and atresia of the external auditory canal on that side. The choanal obstruction was satisfactorily correlated but the atresia of the external auditory canal was not, although roentgenograms showed apparently normal ossicles in the middle ear. The most important feature of Dr. Anderson's presentation is the attempt to bring to the attention of obstetricians and pediatricians the fact that immediate treatment of complete bilateral occlusion of the choanae in the new-born is a life saving measure. It is of some interest that of six patients in Dr. Anderson's series four were males and two females. Fraser and Kahler stated that females were especially affected. Statistics in these rare conditions are always dangerous. It appears from this series that study of a sufficient number of cases will reveal that sex is not a factor in the incidence. I was interested in Dr. Schaeffer's stating that heredity was not a factor, and I am certain that he is correct. I have always been influenced by Lang's report of five members of a single family who had unilateral occlusion of the choana and in each instance the occlusion was on the same side. Satisfactory results followed Dr. Anderson's operative intervention in every case. Unfortunately, this is not always the case. The membranous obstructions probably cause more difficulty than the bony ones. It seems that cauterization is useful if followed by dilation with rubber bougies. In the bony obstructions the excision cannot be too widely made. An attempt is made to render the caliber that of the nasal fossa, because the thing that is feared is postoperative cicatrization. If epidermization does not follow promptly, this is a serious factor to contend with.

DR. R. C. GROVE, New York: Dr. Anderson has rendered otolaryngologists a service in presenting so clearly the subject of congenital atresia of the choanae. One is apt to think too little about embryology in routine clinical work. The portion of his paper dealing with the embryologic development of the nose is instructive. The important question to decide is Are we failing to diagnose this condition as often as it occurs? Dr. Anderson has wisely suggested that some of the deaths in the first few hours or days after birth may be due to bilateral choanal atresia. We all know that removing the adenoids in every child with difficulty in breathing through the nose without a proper nasal examination is to be condemned. I believe that a cotton-tipped probe can be passed through each nostril without causing much distress to the patient. All older children and adults should be examined with the nasopharyngoscope. Dr. Anderson's paper impressed me with the number of cases in which submucous resection, trimming of the turbinates and even removal of tonsils and adenoids was done without diagnosis of the atresia until the time of operation or later. Possibly because of its infrequency one does not think of it. Dr. Anderson reports six cases at the Mayo Clinic in thirty years, and Logan Turner six cases in the Royal Infirmary of Edinburgh in twenty years. I have seen two cases during the past ten years. Both of these were seen in my allergic work, a point which I would emphasize as the patients complained of sneezing and of a mucous discharge from the affected nostril. Both were young girls in their twenties and the interesting feature in the first case was that she had never noticed that she did not breathe through the one nostril. She had had her tonsils removed in one clinic and a second check up in another without the condition being diagnosed. Both patients had perfectly normal hearing on the side of the atresia, which makes one wonder about the necessity of submucous resection in so many cases of deafness. Treatment in most cases of choanal atresia is simple, as Dr. Anderson has pointed out. I think the important and necessary procedure is to make a sufficiently large operative opening and to maintain the patency of the operative area during the first few weeks of convalescence.

DR. GORDON B. NEW, Rochester, Minn.: I might say a word about these children, particularly the ones that die shortly after birth. Death is due to the fact that they have trouble breathing on account of their tongue sucking back against the pharynx, resulting from the complete obstruction of the nose. In two cases I have been able to pass a catheter into the hypopharynx just back of the tongue, holding the tongue forward and thus giving an airway. Immediately one will find that these children who were unable to breathe and unable to eat, except with difficulty, are able to breathe quietly by means of the airway. In both these cases I replaced this catheter with a piece of curved celluloid about the size of a slate pencil with a cross piece at the mesial end, which was outside the mouth and was attached to the cheeks with silk and adhesive plaster. The child wore this piece of celluloid all the time and was able to sleep normally, to take the feeding bottle with this apparatus in place, and it really gave the child no inconvenience. Later, as the child got older, it was possible to remove this celluloid piece permanently.

DR. C. M. ANDERSON, Rochester, Minn.: I should like to call attention again to the fact that congenital occlusion may in some instances be a cause of infant mortality when it is bilateral. There may be some speech defect, and there usually is if the child learns to talk before the obstruction is corrected. Dr. New has stated in relation to cleft palates that, if the operation is performed and the defect corrected before the child learns to speak, there is usually no speech defect. I believe that the speech defect in these cases is due to inability to breathe through the nose. Operations in these cases should be suited to the individual. I do not believe there is any set rule for operation. All of the six operations performed at The Mayo Clinic were in some respect different.

TRYPARSAMIDE THERAPY OF NEUROSYPHILIS AND ATROPHY OF THE OPTIC NERVE

LEO L. MAYER, M.D.

CHICAGO

It has been fifteen years since the first injection of tryparsamide was given for syphilis of the central nervous system.[1] The frequency of involvement of the optic nerve in neurosyphilis prompted an early report on the visual disturbances produced by tryparsamide.[2] It seems fitting at this time to reconsider and reflect on the conclusions of these early reports by means of a study covering a ten year period, during which time a relatively large and varied group of patients were observed as to the end results obtained. Three clinics in the Chicago area were chosen for this report: the Mandel Clinic of the Michael Reese Hospital, the Eye Clinic of the Northwestern University Medical School and the Syphilis Department of the Public Health Institute. An attempt was made to review the progress of every patient treated with tryparsamide after it became available. For the past seven years I myself have been seeing such patients in each of these institutions. Obviously, not all patients were active in the clinics in June 1936, the limit of the time for the check-up used in this report, and in addition certain patients could not be traced, others had died and some had left the vicinity. Figures as to these difficulties will be given later.

Five years ago Dr. R. D. Smith and I presented a report on eighty-seven patients receiving tryparsamide treatment for neurosyphilis at the Public Health Institute.[3] Although many new patients have been treated with tryparsamide at this clinic since our report, only those seen five years ago are included here. A recheck could be made on only fifty-one, or about 60 per cent of the eighty-seven patients. Ten patients would not return in spite of numerous letters stating the nature of the free examination, thirteen had given fictitious names or addresses, two could not be located, two were duplicates, four were known to have died and five were being seen by private physicians from whom we were able to obtain a record. In the five groups, twenty-one of the thirty-four patients with asymptomatic neurosyphilis were reexamined, two of the four with meningovascular syphilis, eleven of the twenty with tabes dorsalis not having optic atrophy, seven of the twelve with dementia paralytica and ten of the fourteen with optic atrophy. The five groups had 4,297 injections of tryparsamide, totaling 11,075 Gm. of the drug.

At the Northwestern University clinics seventy-one patients were registered as having been under treatment with tryparsamide. Of these only sixty-one, or 85 per cent, could be traced. It is indeed disconcerting that all the patients reported by Lazar[4] except the three most interesting returned for examination. One of the three patients found by Lazar to have had acute blindness following an injection of tryparsamide was known to be dead, but no autopsy had been made. The patients were divided into four groups, with a record of 1,550 injections, totaling 3,151 Gm. of tryparsamide.

The patients attending the Michael Reese clinic were divided into only three groups. Of the twenty-eight having records of tryparsamide therapy only twenty-six, or 93 per cent, had been observed up to the present. Injections to the number of 370, involving the use of 374 Gm. of tryparsamide, were given to these patients.

The total number of injections given in all three clinics was 6,217, with the use of 14,600 Gm. of tryparsamide.

The regular procedure in the administration of tryparsamide differed somewhat in each of the three clinics.

At the Michael Reese Hospital the patient was sent to the Eye Clinic for study of the visual acuity, the visual fields and the fundi before the series of injections was begun. Patients with optic atrophy were rejected for tryparsamide treatment. Weekly doses of 1 Gm. were injected, and if there were no subjective complaints by the patient, who had not been informed of the possibility of optic complications, the patient was not returned to the Eye Clinic until a new series was to start. It is pertinent that visits of patients to the Eye Clinic were not numerous.

In the Eye Clinic of Northwestern University Medical School visual fields, visual acuity and fundi were studied before each injection up to and including the tenth. Subsequent examinations were done on visual complaint of the patient or on my request in order to compare ordinary fields with the flash fields.[5] No patient with defects in the fields or known optic atrophy was accepted by the Skin Department for treatment with tryparsamide. If ocular symptoms occurred injection of the drug was delayed until all symptoms disappeared and reactions were normal.

The Public Health Institute has a resident ophthalmologist, Dr. Justin J. Korwin, who reported on the visual fields, visual acuity and fundi of all patients prior to their receiving tryparsamide. The patient was told of the possibility of ocular complications, and because of this suggestion many examinations of the eyes were requested. How vivid an impression the suggestion made was shown by the fact that frequently when the dose was increased from, for example, 2 to 3 Gm. the patient, seeing this recorded, might have symptoms. At times a sterile hypodermic was given and 3 Gm. recorded. In almost every instance the patient had ocular complaints. After the tenth injection no routine examinations were done except when ocular symptoms were noted. Consultation with the syphilologist, Dr. Jarold Kemp, was accorded every patient with optic atrophy before the indicated use of tryparsamide was decided on. Treatment of all patients having symptoms referable to the eyes was discontinued until reactions were normal and symptoms had disappeared, when the course was resumed.

RESULTS

The patients at the Michael Reese Hospital were divided into three groups: (1) eleven patients with

Read before the Section on Ophthalmology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

1. Lorenz, W. F.: The Treatment of Central Nervous System Syphilis with a New Arsenical, Wisconsin M. J. **20**: 366 (Dec.) 1921.

2. Woods, A. C., and Moore, J. E.: Visual Disturbances Produced by Tryparsamide, J. A. M. A. **82**: 2105 (June 28) 1924.

3. Mayer, L. L., and Smith, R. D.: Ocular Manifestations in Tryparsamide Treatment of Syphilis, Illinois M. J. **65**: 258 (March) 1934.

4. Lazar, N. K.: Effect of Tryparsamide on the Eye: Experimental and Clinical Study and Report of Case, Arch. Ophth. **11**: 240 (Feb.) 1934.

5. Mayer, L. L.: Visual Fields with Minimal Light Stimulus, Arch. Ophth. **9**: 353 (May) 1933; Perimetry with Stimuli of Minimal Duration, Proc. Soc. Exper. Biol. & Med. **32**: 219 (Oct.) 1934; Light Stimuli of Minimal Measured Duration as a Means of Perimetry, Arch. Ophth. **14**: 541 (Oct.) 1935; The Evolution of Flash Perimetry, Am. J. Ophth. **20**: 829 (Aug.) 1937.

asymptomatic neurosyphilis, (2) twelve patients with tabes dorsalis and (3) five patients with dementia paralytica.

Of the patients with asymptomatic neurosyphilis, only one showed a change in visual acuity—an increase from 20/30 to 20/20. All fields remained normal.

In the patients with tabes dorsalis, visual acuity was changed in nine eyes: One patient showed a decrease from 20/20 to 20/30 in the vision of the left eye. The other eight eyes showed an increase in vision, namely, from 20/30 to 20/20, from 20/50 to 20/30, from 10/200 to 20/200, from 20/30 to 20/20, from 20/30 to 20/20, from 20/20 to 20/15 from 20/35 to 20/20. There was no change in visual fields in any of these patients.

Of the patients with dementia paralytica, only one showed a change in visual acuity. This was an increase in the vision of the right eye from 20/200 to 20/40 and in the vision of the left eye from 20/400 to 20/30. No changes in the visual fields were noted in any of these patients.

It is evident that the entire group from the Michael Reese Hospital, receiving doses varying from as little as 3 Gm. to as much as 30 Gm., with the injection of only 1 Gm. at a time in the majority of cases, cannot be a criterion for patients getting larger doses and a greater number of injections. However, the evidence that no reactions were noted and no visual fields changed and that in only one case was there a slight lowering of visual acuity while in eleven eyes vision was enhanced certainly make it appear that trypars-amide caused little or no toxic effects.

In the group with meningovascular syphilis, changes in visual acuity were recorded for sixteen eyes. Five eyes showed a decrease in vision: One patient showed a decrease from 20/25 to 20/50 in each eye, but this was questioned because of the patient's mental status; another, a decrease from 20/30 to 20/15 in each eye, and the third, a decrease from 20/15 to 20/20 in one eye. Eleven eyes showed an increase in vision, namely, from 20/25 to 20/15, from 20/20 to 20/15, from 20/15 to 20/13 for each eye, from 20/25 to 20/16, from 20/25 to 20/20, from 20/30 to 20/20 for each eye, from 20/25 to 20/20 and from 20/50 to 20/20 for one eye and from 20/40 to 20/20 for the other. In only one patient was there a questionable change in visual field, but because of mental changes no ocular field could be taken. Subjective reactions were observed five times in four patients, but no permanent changes were noted in the optic nerve.

In the group with dementia paralytica, changes in visual acuity were recorded for thirteen eyes. Six eyes showed decrease in vision, namely, from 20/15 to 20/20, from 20/15 to 20/25, from 20/50 to 20/70, from 20/30 to 20/70, from 20/20 to perception of light and from 20/13 to 20/30. Increase in vision was shown in seven eyes, viz., from 20/15 to 20/13, from 20/15 to 20/12, from 20/15 to 20/13, from 20/20 to 20/13, from 20/15 to 20/13 and from 20/25 to 20/20 for each eye. Changes in visual field were noted in three patients; homonymous hemianopia of the right eye without reaction developed in one, and one patient had the left field reduced from 20 degrees to zero after a 1 Gm. dose. Three patients had the field of one eye reduced to 20 degrees after a 1 Gm. dose. In addition two other patients had entirely subjective reactions.

Changes in visual acuity were recorded for six eyes of the patients with tabes torsalis. Two eyes decreased in vision, namely from 20/20 to 20/25 and from 20/13 to 20/15. Four eyes increased in vision, viz., from 20/20 to 20/13, from 20/20 to 20/15, from 20/25 to 20/20 and from 20/30 to 20/25. No changes in visual field were seen in this group, and the only reactions were edema of the lid in one patient and nausea in another.

To summarize the data on the seventy-one patients from the Northwestern University Medical School Clinics, in seventeen eyes vision was decreased while in thirty-one visual acuity was enhanced. Three patients with dementia paralytica lost field, one becoming blind, while in one patient a hemianopic field returned to normal.

The patients at the Public Health Institute were grouped as follows: (1) twenty-one patients with

Group with Optic Atrophy (Public Health Institute)

Patient	Present Age (1936)	First Visual Record			Fields	Last Visual Record (1936)		Fields	First Injection of Tryparsamide	Number	Dose	Reaction
1	60	1930	20/20	20/20	Normal	20/20	20/20	Normal	1930 (2)	91	204	None
2	55	1930	20/50	20/40	50° temporal	20/20	20/50	50° temporal	1930 (2)	53	96	None
3	54	1927	20/200	20/100	Normal	20/20	20/20	Normal	1927 (2)	179	435	None
4	59	1931	20/30	P.L.*	Right normal, left 0	20/20	P.L.	Right normal, left 0	1931 (1)	47	90	None
5	52	1929	20/40	20/20	60°	20/20	20/20	Normal	1929 (2)	88	181	None
6	61	1926	20/30	20/30	60°	20/20	20/20	Normal	1927 (3)	87	221	None
7	62	1931	20/20	20/20	Normal	20/20	20/20	Normal	1931 (2)	56	118	None
8	55	1929	20/30	20/30	Normal	20/20	20/20	Normal	1930 (1)	58	116	None
9	61	1926	P.L.	20/20	Right contracted, left normal	P.L.	20/20	Right contracted, left normal	1927 (3)	76	157	Subjective
10	49	1933	10/200	20/30	50°	P.L.	20/30	Right 20°, left normal	1933 (2)	58	106	Subjective

* Perception of light.

asymptomatic syphilis, (2) two patients with meningovascular syphilis, (3) eleven patients with tabes dorsalis without optic atrophy, (4) seven patients with dementia paralytica and (5) ten patients with optic atrophy.

In the group with asymptomatic syphilis, six eyes showed changes in vision, the vision in both eyes being enhanced from 20/30 to 20/20 in three cases. No changes in visual field were noted in this group, and only three reactions were recorded, a slight, a moderate and a severe subjective reaction. The least amount of tryparsamide given to a single patient was 112 Gm. and the greatest 511 Gm.

The patients with meningovascular syphilis showed no changes in visual acuity or visual field and no reactions. The least amount of the drug given was 65 Gm. and the greatest 425 Gm.

In the group with tabes dorsalis without optic atrophy, three eyes showed visual changes, the vision of each improving from 20/30 to 20/20. No changes in visual field were noted in this group and only two reactions, one subjective and the other hysterical. The least amount of tryparsamide given was 11 Gm. and the greatest 338 Gm.

In the group with dementia paralytica, only one eye showed a change in vision, and this was an enhancement from 20/30 to 20/20. No changes in visual field were found, and there were no reactions. The least amount of the drug given was 51 Gm. and the greatest 443 Gm.

The accompanying table shows the data on the group with optic atrophy, and I should like to call particular attention to it because these were cases of known optic atrophy in which, in spite of the so-called contraindication, the use of tryparsamide was deemed advisable because of the patient's general condition. Eleven eyes showed changes in vision. The vision of two was decreased, from 20/40 to 20/50 and from 10/200 to perception of light, respectively. Nine eyes had an increase in visual acuity, viz., from 20/50 to 20/20, from 20/200 to 20/20, from 20/100 to 20/20, from 20/30 to 20/20, from 20/40 to 20/20 and from 20/30 to 20/20 for both eyes in two cases. Changes in visual field were noted in three cases—from 60 degrees to normal for both eyes in two cases and a decrease from 50 to 20 degrees for the right eye in one case. Subjective reactions were noted on two occasions in this group.

To summarize the data on the groups from the Public Health Institute, consisting of fifty-one patients observed for a ten year period, two eyes lost vision, one becoming blind for all practical purposes, while nineteen showed an improvement of visual acuity. Four eyes had their visual fields increased from 60 degrees to normal, while in one eye there was a diminution from a contracted field of 50 degrees to one of 20 degrees.

COMMENT

Of the entire group of 155 patients, 54 were observed from an ocular point of view for at least five years and a few for as long as ten years. In only two eyes, or 1 per cent, did blindness ensue, while four eyes lost visual field to a degree. It is not my purpose to argue whether these impairments were due to tryparsamide, to the neurosyphilis or to both. However, it must be admitted that the patients were poor risks for any kind of treatment. In view of the fact that visual acuity and visual fields were decidedly improved in so many instances, it would seem fair to state that tryparsamide under proper control is less dangerous than at first considered, even if optic atrophy has already become apparent. Moore's [6] statement that "tryparsamide is absolutely contraindicated in the treatment of the syphilitic optic atrophies," Stokes's [7] contention that tryparsamide is contraindicated "when disease of the optic nerve is present (not the vascular mechanism)" and the statement of Bluemel and Greig [8] that tryparsamide is "a form of therapeutic dynamite, notable chiefly for its dangers," do not agree with my experience. On the other hand, many reports, namely, those of Lillie,[9] Cady and Alvis,[10] Dancy,[11] Neff,[12] Roth,[13] Casten,[14] Lees,[15] Hyder,[16] Wile and Wieder,[17] Lichtenstein,[18] Cormia [19] and others, and, more recently, the experience of Cordes [20] and of Fine and Barkan [21] agree with my results, indicating that "the percentage of danger from tryparsamide is no greater than that from some other preparations, providing the proper precautions are used," [20] and that "the proved therapeutic value of tryparsamide, in a disease which is 'a medical emergency' justifies the slight risk." [21]

It is evident that a certain small number of patients with syphilis of the central nervous system have involvement of the optic tracts which may lead to blindness even without specific treatment. It is also acknowledged that an even smaller number of such patients when given tryparsamide may have subjective or objective signs and symptoms of injury to the optic tracts. Whether this minimal degree of danger is due to a direct toxic effect of the drug on the retina or optic nerves, to a particular sensitivity of the patient to the drug, to the toxic effects of the disease on the optic nerve, to arterial spasm caused by the drug or the disease or to the noxious influence of the treatment for syphilis during a period of low blood pressure, as hypothesized by Lauber,[22] the low incidence of damage fully justifies the use of tryparsamide with proper observation.

---

6. Moore, J. E.: The Modern Treatment of Syphilis, Baltimore, Charles C. Thomas, Publisher, 1933, pp. 367, 368.
7. Stokes, J. H.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Company, 1934, p. 1172.
8. Bluemel, C. S., and Greig, W. M.: The Results Obtained with Tryparsamide in a Group of Fifty Cases of Neurosyphilis, Colorado Med. **22**: 16 (Jan.) 1925.
9. Lillie, W. I.: Tryparsamide Treatment of Syphilis of the Central Nervous System: Observations from an Ophthalmologic Standpoint, J. A. M. A. **83**: 809 (Sept. 13) 1924.
10. Cady, L. D., and Alvis, B. L.: The Use of Tryparsamide in Patients With and Without Ocular Lesions, J. A. M. A. **86**: 184 (Jan. 16) 1926.
11. Dancy, A. B.: Ophthalmoscopic Examination During Treatment with Tryparsamide, J. Tennessee M. A. **18**: 13 (May) 1925.
12. Neff, E. E.: Effect of Tryparsamide in Optic Tract, Wisconsin M. J. **24**: 120 (Aug.) 1925.
13. Roth, J. H.: Observations of the Fundus Oculi in Tryparsamide Treatment of General Paralysis of Insane, Illinois M. J. **48**: 220 (Sept.) 1925; Two Years' Observation of the Fundus Oculi in Tryparsamide Treatment of General Paralysis of Insane, ibid. **51**: 242 (March) 1927.
14. Casten, Virgil: Tryparsamide Amblyopia Treated by "Forced Drainage" of the Cerebrospinal Fluid, New England J. Med. **202**: 676 (April 3) 1930.
15. Lees, David: Observations on the Use of Tryparsamide in the Treatment of Syphilitic Optic Atrophy, Tr. Ophth. Soc. U. Kingdom **52**: 203, 1932.
16. Hyder, H. P.: Tryparsamide in Neurosyphilis, M. J. & Record **121**: 475 (April 15) 1925.
17. Wile, U. J., and Wieder, L. M.: Tryparsamide in the Treatment of Neurosyphilis, J. A. M. A. **84**: 1710 (June 6) 1925.
18. Lichtenstein, Julia V.: Tryparsamide Therapy, Arch. Dermat. & Syph. **24**: 182 (Aug.) 1931.
19. Cormia, F. E.: Tryparsamide in Treatment of Syphilis of the Nervous System, Brit. J. Ven. Dis. **10**: 99 (April) 1934.
20. Cordes, F. C.: Ocular Changes from Central Nervous System Syphilis and the Administration of Tryparsamide, Southwestern Med. **20**: 377 (Oct.) 1936.
21. Fine, Max, and Barkan, Hans: Prevention of Ocular Complications in Tryparsamide Therapy, Am. J. Ophth. **20**: 45 (Jan.) 1937.
22. Lauber, H.: Treatment of Atrophy of the Optic Nerve, Arch. Ophth. **16**: 555 (Oct.) 1936.

CONCLUSIONS

From observation of 155 patients with various types of syphilis of the central nervous system, treated with tryparsamide and under rigid ocular control for a reasonable period of years, the following conclusions may be drawn:

1. Subjective reactions are not infrequent but are often due to suggestion.

2. Severe objective signs of damage to the optic nerve occur infrequently with reasonable ocular control.

3. Of patients treated with tryparsamide, the percentage of those benefiting so far as the optic nerve is concerned is far greater than the percentage of those in whom damage may occur.

4. Patients with optic atrophy due to syphilis should have the advantage of the use of tryparsamide when the drug is indicated.

104 South Michigan Avenue.

ABSTRACT OF DISCUSSION

DR. FREDERICK C. CORDES, San Francisco: The accounts in the literature have been so varied that there has been a great deal of discussion as to the safety of tryparsamide. This has resulted in a fear of blindness that has done a great deal to deprive many patients with neurosyphilis of one of the most useful of all drugs. There can be no doubt that the use of tryparsamide carries a certain danger comparable to that encountered in the use of any powerful drug, including arsphenamine. That the optic pathways are vulnerable at times is also conceded. In just what manner this damage occurs is still unsettled. In considering this problem, two factors should be borne in mind: 1. Certain patients are sensitive to tryparsamide, as they may be to other drugs. 2. At times syphilitic optic atrophy has a tendency to progress rapidly without the use of any specific therapy. It is rather generally conceded that in cases in which there is no damage to the optic tract the risk is very slight, provided one is alert to the early warning of the subjective symptoms or objective signs. When symptoms appear, one must assume that the patient is sensitive to the drug, and in these cases it must be discontinued or used with a great deal of discretion. In the cases of optic atrophy shown in chart 12 there was a decrease in central vision in two patients, and in each instance this was limited to one eye. The visual field changes also are interesting. In only one case was there a decrease in the field of vision in one eye. From this it seems fair to assume that (1) the drug was not responsible for the decrease in vision and field, or both eyes would have been involved; (2) the process was too active or too far advanced to be benefited by the drug. This series of cases coincides with my experience that optic atrophy in itself is no contraindication to the use of tryparsamide provided the case is carefully controlled for evidence of sensitiveness to the drug. It is imperative that all these patients be watched carefully for the symptoms and signs associated with sensitiveness to the drug. I should like to emphasize the necessity of complete examination before the first treatment. There have been two patients who reported with the history of blindness following the use of tryparsamide. On investigation, it was found that there was no record of examinations of visual acuity, fields or fundus before the therapy was instituted. Obviously these cases are of no value in determining the effect of the drug. More large series of carefully controlled and observed cases should be reported so that it will be possible to determine definitely what the contraindications may be to the use of tryparsamide.

DR. WALTER I. LILLIE, Philadelphia: The number of cases presented is large, and the period of treatment is of sufficient duration not only to obtain a good clinical conception of the value of tryparsamide as a therapeutic agent but also to support my contention as well as the contentions of Cady and Alvis, Dancy, Neff, Roth, Casten, Lees, Hyder, Wile and Wieder, Lichtenstein, Cormia, Cordes, Fine and Barkan, and others, that tryparsamide is not more dangerous from the visual standpoint than other preparations used in the treatment of syphilis of the central nervous system. Proper ocular supervision should be instituted for all cases treated, regardless of the therapeutic agent, as it is a well established fact that syphilis alone may and does cause progressive damage to the optic nerves, with resulting loss of peripheral or central vision, or both. No one has definitely proved that tryparsamide or any other arsenical is neurotropic. The type of field changes occurring before, during or after a proper therapeutic regimen has been instituted are similar to those occurring in untreated syphilis, and as yet no pathognomonic field defect due to tryparsamide has been demonstrated. I believe, as does Mayer, that suggestion may play an important part in the production of subjective symptoms, while the organic changes are best explained by a direct syphilitic process in the optic nerves; namely, a perineuritis. If tryparsamide is of value in arresting active syphilis of the central nervous system it should also be of value in arresting active inflammation of the retina, choroid or optic nerve, and the presence of the latter should be no contraindication to its use. I am sure that ophthalmologists are all agreed that an untreated active syphilitic process of either the central nervous system or the visual apparatus has a very unfavorable prognosis, so that any antisyphilitic therapeutic agent which will arrest or improve the condition should be used regardless of the pathologic condition existing when the therapeutic regimen is instituted. Reliable statistics prove conclusively that in inadequately or untreated syphilis of the central nervous system the occurrence of blindness due to optic atrophy is about 35 per cent. The comparison of this percentage to the reported 2 to 10 per cent of blindness occurring during treatment with tryparsamide suggests that tryparsamide is preventing the development of optic atrophy sufficiently marked to affect the central visual acuity in about 25 per cent of the cases. Dr. Mayer has presented in an orderly and comprehensive manner a sufficient number of cases, thoroughly examined ophthalmologically before, during and after treatment with tryparsamide, to justify the conclusion that this form of treatment, properly supervised by the syphilologist and ophthalmologist, is decreasing the incidence of optic atrophy in all types of syphilis of the central nervous system. My experience with similar cases parallels that of Dr. Mayer, and I am in accord with his conclusions in every respect.

DR. LEO L. MAYER, Chicago: Dr. Cordes has added some important points which, because of the limited time at my disposal, I was unable to include in this portion of the paper. One of these was the fact that the majority of patients not benefited by tryparsamide were in a precarious state before the drug could be given and thus lost the proper chance for the evaluation of any type of therapy. Another point that Dr. Cordes mentioned which should be stressed is the complete visual examination before any type of antisyphilitic treatment. If the pretherapeutic status is not recorded, the progress and final results obtained have little basis for comparison. The plea of Dr. Cordes for more large series of such syphilitic patients certainly has my endorsement. Dr. Lillie has also emphasized the necessity of proper ocular supervision of neurosyphilitic patients, regardless of the therapeutic agent. I agree with Dr. Lillie. According to my experience no field defect characteristic of a tryparsamide effect has been obtained. It is also important to emphasize the fact that perimetry must be included as an important factor in the treatment of neurosyphilis. I want to add an additional case to this group which Dr. Gifford called to my attention before I left Chicago. A patient had come to the clinic at Northwestern University for tryparsamide treatment and had had fields, fundi, and visual acuity taken. He had then had six injections of tryparsamide without returning to the eye clinic, and when he did return, after this sixth injection, his fields were reduced to 5 degrees of the center in both eyes. The visual acuity was not reduced, as there was no central scotoma. I simply want to add that there was one case in which it seemed that there might have been an ocular effect from the administration of the tryparsamide itself.

IMMUNITY TO SMALLPOX

M. W. HUSBAND, M.D.
AND
DAVID T. LOY, M.D.
MANHATTAN, KAN.

In 1936 Bull and Rankin[1] reported the results of vaccination against smallpox in 5,000 college students at Lehigh University, Bethlehem, Pa. From their results they estimate that more than thirty-three out of each thousand American students entering college have never been vaccinated for smallpox and further that seventy-five out of each thousand college students are without adequate protection against smallpox.

In the same year a more extensive survey was reported by Collins.[2] This survey includes studies of the rural, urban and metropolitan general white population of the United States and records data on the history and frequency of vaccination against smallpox in 9,000 families. Collins found that approximately 70 per cent of the adults had a positive history of vaccination or had had smallpox at some time. Of this 70 per cent, 65 per cent had been vaccinated. This survey showed that there was a larger percentage of vaccinations in cities than in rural districts.

In September 1936, 1,053 students who were matriculating for the first time at Kansas State College were vaccinated against smallpox. Such vaccination at Kansas State College is not compulsory, but by following the method advocated by Diehl,[3] that of vaccinating unless the student offers active resistance, there were only three students of the total group who refused vaccination. These three students came from families in which the parents were devout Christian scientists.

The accompanying table gives in tabulated form the detailed histories and results of the vaccinated group. This group of college students included 739 males between the ages of 16 and 31 years inclusive. Of these 739 male students 628, or approximately 85 per cent, were in the age group 17 to 20 years inclusive. Two hundred and ninety-nine of the total group were females between the ages of 16 to 28 years inclusive. Of these 299 female students 270, or approximately 90 per cent, were in the age group 17 to 20 years inclusive. Approximately 80 per cent of the students in this group came from rural areas and small towns in the state of Kansas.

The following data are significant of a particular age group, predominantly 17 to 20 years inclusive, derived very largely from rural areas and the small towns of Kansas. To date no such study has been recorded in this state.

Of this group 192, or 18.4 per cent, gave a negative history of a previous vaccination against smallpox or of smallpox. Eight hundred and eleven, or 78.1 per cent, gave a positive history of previous vaccination against smallpox and had a visible scar. Thirty-five, or 3.5 per cent, had not had a previous vaccination but gave a positive history of smallpox.

Each student was examined on the second, fourth and seventh days and later if indicated following the date of vaccination. The results were recorded according to the following classification: (*a*) Immune or immediate reaction: the development of a small area of redness with or without the presence of a papule, the height of the reaction being reached within twenty-four to forty-eight hours following vaccination. (*b*) Primary take: the formation of a papule, vesicle and pustule, the height of the reaction being reached within six to ten days following vaccination. (*c*) Secondary take:

Histories and Results of the Vaccinated Group

Race	Sex	Age	Number Vaccinated	Medical History: Previous Vaccination: Negative	Medical History: Previous Vaccination: Smallpox	Medical History: Previous Vaccination: Chickenpox	Results of Vaccination: Negative	Results of Vaccination: Immune	Results of Vaccination: Accelerated	Results of Vaccination: Primary Take	Results of Vaccination: Secondary Take	Failed to Return
Caucasian	Male	16	4	0	3	0	1	0	2	2	0	0	0
Caucasian	Male	17	113	11	85	6	11	1	45	33	28	4	2
Caucasian	Male	18	297	39	223	12	23	1	119	103	54	18	2
Caucasian	Male	19	149	11	138	0	0	2	53	59	22	9	4
Caucasian	Male	20	80	8	63	1	8	1	28	26	18	7	0
Caucasian	Male	21	48	5	35	5	3	0	14	23	9	2	0
Caucasian	Male	22	22	0	18	3	1	0	6	9	2	5	0
Caucasian	Male	23	12	1	9	0	2	0	3	5	3	1	0
Caucasian	Male	24	7	2	4	1	0	0	3	1	2	1	0
Caucasian	Male	25	5	1	4	0	0	0	0	2	1	2	0
Caucasian	Male	26	7	0	7	0	0	0	2	3	0	2	0
Caucasian	Male	27	1	0	0	0	1	0	0	0	1	0	0
Caucasian	Male	29	2	0	2	0	0	0	0	2	0	0	0
Caucasian	Male	31	1	0	1	0	0	0	0	0	0	1	0
Negro	Male	16	1	0	1	0	0	0	1	0	0	0	0
Negro	Male	20	1	0	1	0	0	0	0	1	0	0	0
Negro	Male	21	1	0	1	0	0	0	1	0	0	0	0
Mongolian	Male	20	1	0	1	0	0	0	0	1	0	0	0
Caucasian	Female	16	2	0	2	0	0	0	0	0	0	2	0
Caucasian	Female	17	69	7	55	2	5	1	30	24	10	4	0
Caucasian	Female	18	129	18	98	1	12	0	55	35	30	9	0
Caucasian	Female	19	40	7	27	0	6	0	10	16	13	1	0
Caucasian	Female	20	31	2	24	2	3	0	12	11	6	2	0
Caucasian	Female	21	14	1	13	0	0	1	6	4	1	2	0
Caucasian	Female	22	7	1	5	1	0	0	5	1	0	1	0
Caucasian	Female	23	3	1	2	0	0	0	1	0	2	0	0
Caucasian	Female	24	1	0	1	0	0	0	1	0	0	0	0
Caucasian	Female	26	1	0	1	0	0	0	1	0	0	0	0
Caucasian	Female	28	2	0	0	1	1	0	0	1	1	0	0
Negro	Female	17	1	0	1	0	0	0	1	0	0	0	0
Negro	Female	18	1	0	1	0	0	0	1	0	0	0	0
Total			1,053	115	826	35	77	7	400	362	203	73	8

There were seven patients with negative vaccinations and eight who failed to return for examination, leaving 739 males and 299 females, or a total of 1,038 with complete record. This group gave histories of previous vaccinations, therefore leaving 811 total for previous vaccination.
Chickenpox is recorded only in those cases which gave a negative history of previous vaccination and smallpox. A total of ninety-two students stated that they had had chickenpox.

From the Student Health Service, Kansas State College.

1. Bull, R. C., and Rankin, S. L.: Smallpox Immunity in 5,000 College Students, Pub. Health Rep. **51**: 734 (June 5) 1936.
2. Collins, S. D.: History and Frequency of Smallpox Vaccinations and Cases in 9,000 Families, Pub. Health Rep. **51**: 443 (April 7) 1936.
3. Diehl, H. S.: Preventive Medicine in the Student Health Service, J. Prev. Med. **1**: 377 (May) 1927.

same as primary take except that it occurred in an individual with a visible vaccination scar or with pockmarks. (*d*) Accelerated reaction: same as primary take except that the reaction was less pronounced, developed more rapidly and disappeared in a much shorter period of time.

The following results were obtained from the vaccinations: Four hundred, or 38.5 per cent, had immune or immediate reactions; 362, or 34.9 per cent, had accelerated reactions; 203, or 19.6 per cent, had primary takes, and seventy-three, or 7 per cent, had secondary takes. Only four had systemic reactions of sufficient severity to warrant special medical care. These students made a rapid recovery. The multiple puncture method was employed on the skin site over the insertion of the deltoid muscle in all instances. No dressings or protective shields were used and no secondary infections were encountered. No instance of generalized vaccinia occurred in the group vaccinated.

It may be noted that there are more primary takes recorded than there are students who gave an entirely negative history. We feel that this can be accounted for in the error in the histories of those stating a positive history of smallpox. None of these students had pockmarks and they probably had had chickenpox instead of smallpox.

Apparently the percentage of students with previous vaccination is considerably higher in Pennsylvania than in Kansas. This tends to bear out Collins's observation that vaccination is more frequent in cities than in rural districts. However, the percentage of students with previous vaccination in our study is higher than the percentage found for the general population.

SUMMARY

1. Of the group vaccinated, 26.6 per cent had no protection against smallpox.

2. Thirty-four and nine-tenths per cent (accelerated reactions) had only partial or impaired immunity to smallpox. We feel that it is reasonable to assume that this group is susceptible to smallpox in a milder form and capable of transmitting the disease to nonimmune contacts in a more severe form. Therefore, this group represents a potential public health problem.

3. Sixty-one and five-tenths per cent (primary takes, secondary takes and accelerated reactions) were in some degree susceptible to smallpox.

4. Revaccination restores or reinforces protection against the disease and it is an acceptable procedure from the point of view of the students.

5. The only practical method for reaching the students who are without adequate protection is by vaccination of each entering student. Moreover, these students who go out to become leaders in their communities should be educated as to what constitutes adequate protection against smallpox.

Comprehensive Attack on Traffic Noise.—Three reports on road transport noise have been issued by a Departmental Committee set up by the Minister of Transport, and the position is that for the first time in Great Britain a comprehensive attack has been made on the problem of road traffic noise. To this end, loudness measurements, many thousands in number, have been conducted under widely different working conditions, on the over-all noise of some 800 motor vehicles, both new and old, representing all the main types on the roads today.—Kaye, G. W. C.: Noise and the Nation, *Nature*, Sept. 18, 1937, p. 490.

Clinical Notes, Suggestions and New Instruments

EFFECTIVE USE OF EPINEPHRINE INHALATIONS IN ANGIONEUROTIC EDEMA

EDMUND W. KLINEFELTER, M.D., YORK, PA.

The pathogenesis of angioneurotic edema is unknown. Ten years ago the chief emphasis was placed on the vasomotor and neurotic background. Since that time, however, the vasomotor and neurotic background has been receiving progressively less consideration, and increasing emphasis has been placed on allergy. Certainly, from the standpoint of successful treatment, when an offending substance, food or protein, is shown to be the cause of an angioneurotic edema it should be removed, or there should be attempts made to desensitize the patient. But from the impression gained in reviewing the literature, and from my own experience, attempts to eliminate the offending substance and to desensitize have been largely unsuccessful. Consequently it would seem that this emphasis on the allergic background of angioneurotic edema is of small use from the practical therapeutic point of view. Perhaps the greater emphasis should rest on the older view that angioneurotic edema is a vasomotor neurosis.

If the vasomotor system plays a conspicuous part in angioneurotic edema, one might expect that a drug capable of influencing this system might influence the disease. Epinephrine exerts a marked influence on the vasomotor system and hence from the theoretical standpoint one might expect a beneficial influence on angioneurotic edema. But the practical application of epinephrine therapy in the past has fallen short of the theoretical expectations. This failure has been due to the fact that the method and manner of use of epinephrine have not been understood.

In this paper I call attention to treatment directed toward the vasomotor component in angioneurotic edema by the use of inhalations of epinephrine 1:100 solution as recommended by Graeser and Rowe[1] for bronchial asthma. In the first place, it should be emphasized that the effective time to employ inhalations is before or at the very outset of an attack. A warning sign or symptom will often tell the patient of an approaching attack. Then from two to three inhalations of the epinephrine should be taken at once and repeated every five to fifteen minutes until the warnings disappear and there is no evidence of swelling. For their curative effect and after the threat of the acute attack has faded, three inhalations should be taken every two hours during the day and on alternate days over a period of from three to five weeks. If during this period an acute attack threatens, the more frequent administration of the inhalations should be resorted to.

By this method excellent clinical results were obtained. After a few inhalations acute attacks were quickly aborted and continued use appeared to exert a curative influence. Even the case of long standing responded well to this treatment. No significant side effects were noted. The following case illustrates the excellent results obtainable from inhalations of epinephrine:

REPORT OF CASE

A single woman, aged 24, a stenographer, well developed but neurotic, had suffered typical attacks of angioneurotic edema of the eyelids for the past ten years. Lately the attacks had been increasing in number and severity. Fits of sneezing and a feeling of tightness in the eyelids always preceded an outbreak. Within half an hour the eyes would become completely buried beneath thick sausage-like translucent swellings the size of a hen's egg. Vision was impossible. The swellings were pale and slightly itchy. They were always well defined and did not pit on pressure. Within a day or two they disappeared without leaving a trace.

The physical examination revealed nothing otherwise of interest excepting an unstable vasomotor system. Laboratory studies disclosed nothing abnormal. The blood Wassermann

1. Graeser, J. B., and Rowe, A. H.: Inhalation of Epinephrine for Relief of Asthmatic Symptoms, J. Allergy **6**: 415 July) 1935.

reaction was negative. The urine contained no albumin, sugar or hematoporphyrin. Skin tests and elimination diets showed sensitiveness to a variety of proteins and foods.

The patient without improvement had been subjected to practically all the measures usually recommended for the disease, including a milk and cereal diet, specific desensitization, elimination diets, calcium gluconate, quinine and antipyrine, atropine, bromides and phenobarbital, acid therapy, alkali therapy, peptone desensitization, autohemotherapy, typhoid vaccine, biliary drainage, high voltage roentgen therapy to the cervical roots, and short wave diathermy. During the attacks local applications of cold compresses to the swellings, injections hypodermically of epinephrine, and capsules orally of ephedrine were thought to be of slight benefit.

On examination May 3, 1936, a spell of sneezing started and the patient experienced a feeling of tightness in the eyelids. They started to swell and immediately 1:100 epinephrine solution was inhaled. After the first three inhalations the feeling of tightness disappeared and there was no further increase in the swelling. Three inhalations were taken every fifteen minutes for three hours, and then the interval between inhalations was lengthened to two hours for the remainder of the day. Subsequently three inhalations were taken every two hours on alternate days over a period of five weeks. Since this period of treatment no further inhalations have been necessary. The patient now has suffered no angioneurotic swellings for over a year, whereas prior to this treatment for more than ten years not a single month passed without one or more attacks.

COMMENT

A survey of the literature on the treatment of angioneurotic edema with epinephrine revealed only a small number of reports. Codd[2] in 1917 reported the cure of a case of angioneurotic edema by the use of epinephrine hypodermically and tablets orally. MacGowan, Longcope and others, cited by Menninger,[3] feel that epinephrine may be of occasional benefit. Recently Hughes[4] reported a case of angioneurotic edema of the throat in which he attributed improvement to epinephrine used hypodermically and as a spray, together with capsules of ephedrine orally. Nevertheless, from the literature and from my own experience the impression was gained that epinephrine as formerly used was of doubtful value in this disease. To be sure, little or no benefit can be expected from the use of epinephrine in the acute case after the swellings have fully developed. The important factor, therefore, in the management of angioneurotic edema, which has received no emphasis in the literature, is the early administration of epinephrine before or at the very earliest development of the swellings.

Although it is stated that these swellings not infrequently develop without warning, most patients will present a sign or symptom before or early in the attack which will permit the use of epinephrine in time to be effective. Numerous preceding or concomitant signs of angioneurotic swellings have been mentioned in medical writings. Hughlett[5] states that attacks may be preceded by redness, heat, itching or urticaria and that they are almost always accompanied by a feeling of tension in the skin of the affected part. Abdominal pain of a colicky nature is mentioned frequently as preceding or accompanying attacks of angioneurotic edema. Frieboes[6] calls attention to the fact that for several hours preceding an outbreak the patient may be warned by an internal feeling of nervousness and restlessness. And Oliaro[7] mentions numerous cerebral symptoms accompanying or preceding an attack of angioneurotic edema such as lassitude, tremors, drowsiness, a numb feeling in the head, dizziness, paresthesias in the extremities and transitory oculomotor paralysis.

The institution of epinephrine inhalation therapy marked a great advance in the treatment of bronchial asthma. The employment of this treatment shows promise of a comparatively greater advance in the management of the more serious angioneurotic edema. However, it should be mentioned here that a search of the literature disclosed no report in which epinephrine inhalations were employed in the treatment of this disease. Furthermore, although I am aware that angioneurotic edema often appears and disappears without apparent reason, the continued use of the inhalations seems to exert a definite curative influence.

2. Codd, J. A.: Adrenalin in Angioneurotic Edema, Brit. M. J. **1**: 808 (June 16) 1917.
3. Menninger, W. C.: The Treatment of Angioneurotic Edema, J. M. Soc. New Jersey **23**: 68 (Feb.) 1926.
4. Hughes, D. R.: Angioneurotic Edema, Brit. M. J. **1**: 121 (Jan. 16) 1937.
5. Hughlett, W. S.: Discussion of Angioneurotic Edema with Report of a Case, J. Florida M. A. **14**: 623 (June) 1928.
6. Frieboes, Walter: Akutes umschriebenes Hautödem in Atlas und Lehrbuch der Haut- und Geschlechtskrankheiten, Leipzig, F. C. W. Vogel, 1930, p. 86.
7. Oliaro, T.: On Cerebral Symptoms in Quincke's Angioneurotic Edema, Klin. Wchnschr. **12**: 1185 (July 29) 1933.

SUMMARY

1. Oral inhalations of epinephrine 1:100 solution have been found effective in preventing the development of angioneurotic swellings.

2. The necessity has been stressed of the early use of epinephrine inhalations before or shortly after the swellings have started.

3. Epinephrine in the fully developed acute case has been found of little benefit in reducing the swellings.

4. Continued use of inhalations of epinephrine in angioneurotic edema appears to exert a curative influence.

546 West Market Street.

REACTION TO SODIUM MORRHUATE INJECTIONS FOR VARICOSE VEINS AND HYDROCELE

J. TECUMSEH N. MCCASTOR, M.D.
AND
MARY COUSINS MCCASTOR, M.D.
NEW YORK

Having read of severe general reactions following the injection of sodium morrhuate into a varicose vein in an article by Dr. Maurice L. Dale in THE JOURNAL for Feb. 27, 1937, and in an article by Dr. Kenneth M. Lewis in the issue of Oct. 17, 1936, we report our case to emphasize the possible dangers of this form of therapy.

W. J., aged 30, was treated on March 12, 1937, with the injection of 5 cc. of 5 per cent sodium morrhuate (Kirk) into the right leg below the knee. At that time he made no complaint and no reaction was discernible. On March 18 the injection was repeated. The patient's face quickly turned pale and the lips blue. He was advised to recline on the table for about five minutes, after which he said he felt "all right" and outwardly appeared so. We asked him to remain in the waiting room while we turned our attention to another case. After ten minutes he said to the assistant, "I feel very good now, I think I shall go." Arising, he took two steps to the corner of the room to reach for his hat and coat and then suddenly collapsed, his head striking the floor with extreme violence. The pulse was imperceptible, respiration had ceased, the face was cyanotic, the pupils were dilated and the balls of the eyes were rolled upward toward the head and were glassy. To all outward appearance he was dead. He had lost control of the sphincter of the bladder. His clothing was loosened, artificial respiration was instituted and 5 minims (0.3 cc.) of epinephrine was injected into the jugular vein. The injection was repeated in two minutes, and an ampule of coramin was injected subcutaneously. At the end of four minutes the patient gasped and respirations were restored. The pulse was thready and irregular. The sodium morrhuate had been given at twenty minutes to six in the evening. At 6:30 the pulse rate was 60 and the face had changed from blue to a pasty white. The lips were pallid and the eyes still glassy, but the reflexes had returned. At 7 p. m. the pulse rate was 82 and at 8 p. m. 84. The patient was unable to retain whisky, so an ounce of sherry wine (30 cc.) was given. He had previously taken a few sips of coffee. It was impossible to move him from the table for four and one-half hours. The mere act of sitting up, with aid to receive nourishment, caused fainting. He complained of extremely violent frontal headaches.

The case resembled that of Dr. Lewis's in that bradycardia was present, there was no rash of any kind and there were no bronchial or intestinal spasms. The patient did have a spasm of the muscles of both legs, he said, as high as the saphenous opening, and he described it as a shooting pain in both legs. Because of his condition, he remained overnight, and in the morning he was able to return home. His history shows that in 1919 he had urticaria of such severity that it was

necessary for him to remain in bed for three weeks. At that time, he said, he received injections because of sensitivity to lamb and to cheese.

In the last year we have given over 2,500 injections for varicose veins, and this is the first such reaction to occur.

We wish to report also a reaction to the same substance which occurred at the giving of the second injection for hydrocele.

The first injection of 1 cc. of Searle's sodium morrhuate into the hydrocele sac caused no pain or untoward symptoms of any kind. A week later the patient returned for his second injection, at which time 2.5 cc. of sodium morrhuate was injected into the sac. Within two minutes the patient collapsed and complained of severe intestinal cramps and pain from the kidney region to the groin. Five-tenths cubic centimeter of epinephrine was administered, followed by one-third grain (0.2 Gm.) of pantopon (a preparation containing the hydrochlorides of the alkaloids of opium, principally morphine). Three days later the scrotum was enlarged to three times its original size and caused considerable pain. A week later, after application of an ice bag, with elevation of the testicles and rest in bed, the patient was ambulant. He returned to our office; the scrotal sac was punctured and about 6 cc. of straw-colored fluid was withdrawn. Three weeks later the scrotum was normal in size and no hydrocele was in evidence. There was no history of allergy.

57 West Fifty-Seventh Street.

UNUSUAL RELATION BETWEEN MENSTRUAL FUNCTION AND ASCITES IN A CASE OF JUVENILE CIRRHOSIS OF THE LIVER

SHATTUCK W. HARTWELL, M.D., PH.D., MUSKEGON, MICH.
AND
WALTER R. JOHNSON, M.D., ASHEVILLE, N. C.

The following case report is worthy of record for several reasons: first, because ascites was the outstanding symptom at all times; second, because a Talma-Drummond-Morrison operation plus omentopexy was performed in an attempt to reduce the degree of ascites, and as far as we can learn this is the first case of juvenile cirrhosis in which such a procedure was utilized,[1] and third, because there was apparently a remarkable relationship between the degree of ascites and the menstrual function. Observations have been carried out over a period of six years, and while no conclusions have been reached as to the mechanism responsible for the reduction of the ascites coincidently with the establishment of menstrual function, the observations seem in themselves to be sufficiently interesting to warrant inclusion in the literature.

Juvenile portal cirrhosis (Laënnec's atrophic nodular cirrhosis) is a condition rarely encountered. Sutton[2] in 1930 was able to find in the American literature but twelve proved cases of nonalcoholic atrophic cirrhosis in children. He added the thirteenth.

The patient, a girl of 18, had lived in Czechoslovakia until her eighth year. At the age of 14 she had pneumonia. Puberty had begun when she was 14, but her breasts had remained flat and infantile in appearance and catamenia had never been established. An older sister had not menstruated until her sixteenth year. Both parents, one brother and three sisters were normal and healthy in every respect, and there was no history of hepatic disease in any of the other relatives. In the patient's past history there was no record of alcoholism, unusual diet, exposure to chemicals or infection.

In the fall of 1929, at the age of 16, she began to notice slight enlargement of the lower part of the abdomen. This enlargement increased gradually, but no other symptoms were noted until the fall of 1930, at which time the distention of her abdomen had increased sufficiently to cause dyspnea on exertion. At this time she first consulted a physician. In April 1931, after a brief episode of mild jaundice without pain, she went to the University Hospital at Ann Arbor, Mich. Her outstanding complaints on admission were (1) marked ascites, (2) dyspnea on exertion and (3) amenorrhea and atrophic breasts. Routine physical examination showed nothing abnormal except distention of the left jugular vein, a greatly distended abdomen with a distinct fluid wave, and a barely palpable liver. Temperature, pulse and respirations were normal throughout fifty-one days of observation. Laboratory tests gave negative results except that they revealed basal metabolic rates of minus eight and minus eighteen. X-ray studies of the sella turcica and the gastro-intestinal tract yielded nothing important. X-ray studies of the chest resulted in a roentgenologic diagnosis of congenital heart disease. On two occasions 4,000 cc. of ascitic fluid was removed. Inoculations of guinea-pigs with the ascitic fluid did not reveal tuberculosis. The final clinical diagnoses were (1) Pick's disease and (2) portal cirrhosis.

In November 1931 the patient registered at the Mayo Clinic. Paracentesis had been performed once in the meantime to reduce discomfort and dyspnea. Catamenia had not appeared, and her only other complaints were dyspnea on exertion and marked enlargement of the abdomen. Except for extreme ascites, physical examination gave essentially negative results, as did routine tests of the blood and urine and serologic tests. No dependent edema or superficial collateral circulation was noted. Her weight at this time was 128 pounds (58 Kg.). A test of the liver function with bromsulfalein showed grade 2 dye retention. The serum bilirubin content was 1.7 mg., and there was a direct van den Bergh reaction. Roentgenograms of the chest revealed a peculiar globular shadow in the mediastinum, which was at first interpreted as being the outline of a congenitally diseased heart. Further study, including fluoroscopic examination, indicated that this shadow was cast by an ovoid mass in the posterior mediastinum, definitely behind the heart. X-ray treatment produced no change in the size of this mass.

By means of ammonium nitrate given orally and salyrgan given intravenously, satisfactory diuresis was obtained. Several pounds of weight were lost, and the ascitic distention was materially reduced. The patient felt definitely more comfortable, and she was allowed to return to her home in Michigan. The clinical diagnoses made were (1) juvenile cirrhosis of the liver, (2) amenorrhea and (3) mediastinal tumor of unknown nature.

She was first seen by one of us (S. W. H.) Dec. 15, 1931, because of an increase in the degree of ascites. She was apparently well otherwise except for dyspnea on mild exertion. Three days later 9,000 cc. of straw-colored ascitic fluid was removed from her abdomen. After this procedure a firm liver could be palpated extending across the entire right upper part of the abdomen and the upper one half of the left upper quadrant. The ascitic fluid reaccumulated rapidly, and on Jan. 7, 1932, with the patient under ether anesthesia, 7,000 cc. of fluid was withdrawn by paracentesis, after which an exploratory incision was made in the upper part of the abdomen. Careful inspection of the abdominal contents revealed the organs, including the spleen and the peritoneum, to be normal grossly, except for the liver, which was moderately enlarged and which was a peculiar pale pink. Its surfaces were studded with tiny vesicles which could not be ruptured by the finger or by wiping vigorously with dry gauze. A large biopsy specimen was taken from the liver, and a Talma-Drummond-Morrison operation was performed, together with an omentopexy.

Portions of the liver were sent to two responsible pathologic laboratories for study. One laboratory reported "biliary cirrhosis (with parenchymatous degeneration)"; the other, "hepatitis (with portal cirrhosis)." The microscopic examinations failed to demonstrate the vesicles which had been so prominent on inspection of the surface of the liver.

The wound healed by primary intention, and the patient made an uneventful recovery. She was dismissed from the hospital twenty days after operation. Three weeks later the ascitic fluid had reaccumulated to such an extent that she returned for further treatment. Six grains (0.4 Gm.) of ammonium nitrate was given orally each day, and injections of merbaphen were begun, after which there was a marked increase in the urinary output and a comcomitant decrease in the size and tenseness of the abdomen. During March and April of 1932 the abdomen measured approximately 92.5 cm. in circumference and the patient's weight averaged about 119 pounds (54 Kg.). She felt well and was able to help her mother with the housework.

On May 28, 1932, after vigorous dancing at a wedding the previous day, her first menstrual period began, after which she felt greatly improved and stated that her abdomen was definitely smaller. Within a month, however, it again measured 92 cm. in circumference.

1. Nordland and Larson's omentopexy was done in 1932.
2. Sutton, T. Leonard: Cirrhosis of the Liver in Childhood: Report of a Case of Atrophic Cirrhosis in a Boy Aged Ten Years, Am. J. Dis. Child. 39: 141-147 (Jan.) 1930.

On Nov. 8, 1932, the patient entered the University Hospital at Ann Arbor for a second period of observation. Study of the ascitic fluid revealed a specific gravity of 1.019, alkaline reaction, grade 4 albumin and a negative reaction to Gmelin's test. There were 1,080 red cells and 230 white cells per cubic centimeter of fluid. Ninety per cent of the white cells were small lymphocytes. The serum bilirubin content was 2.5 mg., and there was a direct reaction. A dextrose tolerance test revealed a blood sugar content of 86 mg. during fasting, 103 mg. at the first hour, 90 mg. at the second hour and 100 mg. at the third hour. Concomitant specimens of urine did not contain sugar. A tick-tack rhythm of the heart and a paradoxical type of pulse were noted.

With the patient on a neutral diet with forced fluids plus ammonium nitrate orally and salyrgan intravenously, the ascites was reduced almost completely, and on April 19, 1933, she was dismissed from the hospital with a diagnosis of Pick's disease. Her weight on dismissal was 111 pounds (50 Kg.).

The patient continued the neutral diet and ammonium nitrate medication at home but the ascites soon recurred, producing for the first time marked edema of the lower extremities. Paracentesis was performed at the patient's home on May 9, and 10 pounds (4.5 Kg.) of ascitic fluid was withdrawn. Six weeks later her abdomen was again greatly distended, but she stated that she was able to control the distention to some extent by means of frequent doses of magnesium sulfate.

Because of the apparent improvement after her one and only menstrual period, an attempt was made to establish a normal menstrual cycle in the hope that there might be some connection between this function and the ascites. To this end progynon tablets were given orally, and a normal menstrual flow occurred, lasting from July 5 to July 9. For several days after this period her abdomen was distinctly less tense and she felt more comfortable. On July 20, however, the circumference of her abdomen was 98.5 cm., her weight was 135 pounds (61 Kg.) and a distinct para-umbilical hernia was noted. Twelve and one-half pounds (5.7 Kg.) of ascitic fluid was removed at the patient's home. Palpation of the liver showed that it was definitely softer and smaller than on any previous examination. The administration of progynon tablets was continued and another normal menstrual period occurred on August 21. Again a definite decrease in the size of the abdomen and in the degree of discomfort was noted. A month later paracentesis again became necessary, and 13 pounds (6 Kg.) of fluid was removed. On October 1 another normal menstrual period occurred, and during the succeeding six months her weight gradually decreased from 132 to 121 pounds (from 60 to 55 Kg.), with a concomitant decrease in the circumference of her abdomen from 95 to 79 cm.

From May 12, 1934, to March 1, 1937, twenty-six normal menstrual periods occurred. At first the intervals between periods were two or three months long, but since June 1935 catamenia has occurred at intervals of from thirty-one to thirty-six days. For the first year of menstruation the patient's abdomen increased in size and tension during each menstrual period and during the preceding week. For several days after each period, however, it was so reduced in size that her clothing was noticeably loose. Since her periods have occurred regularly each month her abdomen has become progressively smaller and she feels better than she has ever felt before. She did housework for one year and for the last nine months has worked steadily in a factory. She has grown in height and there has been definite increase in the size of her breasts. Her weight in March 1937 was 140 pounds (63.5 Kg.), and the circumference of her abdomen was 92.5 cm. Formerly, when she was supine the ascites was sufficient to give her the appearance of a pregnant woman at full term. At present her abdomen is almost scaphoid when she is supine, and there is no ascites. In April 1936 the margin of the liver was palpable 7 cm. below the right costal margin. In March 1937 the liver was palpable for 5 cm. The spleen has never been palpable. Since the menstrual function was established in September 1933 there has been no need for paracentesis or medication designed to promote diuresis.

COMMENT

There is some difference of opinion, both clinically and pathologically, as to the nature of the disease process that is present in this case. A diagnosis of Pick's disease was made by one group of investigators. Another group felt that the x-ray appearance of pericardial effusion was produced by a posterior mediastinal mass wholly separate from the heart. However, at one time or another both groups have made a diagnosis of portal cirrhosis. One pathologist, after a study of the liver tissue removed at operation, made a diagnosis of "biliary cirrhosis with parenchymatous degeneration"; the other concluded that the tissue represented "hepatitis with portal cirrhosis." These differences of opinion are not rare in the field of hepatic pathology, and as many students feel that the various pathologic pictures represent nothing more than different stages of the same degenerative-reparative process, we need not be too much concerned with the failure of the two pathologists to agree exactly. From a clinical standpoint the outstanding feature in this case has been ascites of hepatic origin. Whether the ascitic fluid developed as a transudate from the portal circulation secondary to portal obstruction due to portal cirrhosis, or as an exudate from the surface of the liver, as might be the case in Pick's disease, the problem was the control of the ascites. The use of the Talma-Drummond-Morrison operation offered the only permanent solution to the problem in either case, although its use has previously been recommended only in case of portal cirrhosis. Jaundice has constantly been lurking in the background, as the brief period of icterus six years ago and the more recent direct van den Bergh reactions of the blood serum indicate.

The other point of interest has been the sexual immaturity as evidenced by amenorrhea and undeveloped breasts. Such immaturity has been mentioned by several other writers in connection with juvenile cirrhosis. Barker [3] noted the association of hypoplastic breasts and infantile uterus in a girl of 17 who had cirrhosis of the liver and ascites. Tramontano [4] reported a case of splenomegalic atrophic cirrhosis in a 23 year old man who presented definite sexual infantilism. Reuben and Peskin [5] noted "distinct evidence of infantilism" in an 8 year old girl with syphilitic cirrhosis.

A Talma-Drummond-Morrison operation plus omentopexy was performed on our patient in an effort to improve the collateral circulation and render paracentesis unnecessary. In 1932 a similar procedure was carried out by Nordland and Larson [6] on a 6 year old child with Laënnec's cirrhosis. Deep jaundice was the outstanding complaint in their case, ascites being found only after the abdomen was opened. Successful palliation for a period of two years followed the operation. As far as we can learn, these two cases are the only ones reported in the American literature in which such an operation has been performed for juvenile portal (Laënnec's or atrophic) cirrhosis.

It may be argued that the improvement noted in our case in the last five years has been due primarily to the operation. Against this conclusion is the fact that sustained improvement did not occur for one year and nine months after it. Only after the menstrual function was well established did the need for frequent paracentesis disappear. While it is recognized that repeated paracentesis may eventually control the ascites in some adult cases of portal cirrhosis (and this possibility must be considered here), in this case our juvenile patient demonstrates very positively an intimate relationship between menstruation and the degree of ascites. As far as her subjective sensations were concerned, there was no doubt that she was far more comfortable immediately after the menstrual flow had ceased. Clinical observations tended to confirm her own observations, since the circumference of the abdomen decreased definitely after catamenia. The fact that paracentesis and attempts at diuresis have been unnecessary in the three years since menstruation began is perhaps the strongest proof that in this case a definite relationship exists between the menstrual function and the degree of ascites. Studies on premenstrual retention of water may shed some light on this interesting problem.

3. Barker, Lewellys F.: Cirrhosis of the Liver with Ascites, Splenomegaly, Secondary Anemia, and Endocrinopathies in a Girl of Seventeen: Comments upon Differential Diagnosis of Coarsely Nodular Toxic Cirrhosis from Banti's Disease and Other Cirrhoses; Treatment of Cirrhosis of the Liver, M. Clin. North America **14**: 99-107 (July) 1930.

4. Tramontano, V.: Infantilism and Hepatic Cirrhosis, Morgagni **71**: 1977-2000 (Sept. 15) 1929.

5. Reuben, Mark S., and Peskin, Robert: Cirrhosis of the Liver, Arch. Pediat. **47**: 715-727 (Nov.) 1930.

6. Nordland, Martin, and Larson, Lawrence M.: Portal Cirrhosis in a Child, with Successful Palliation by Omentopexy for Two Years, J. A. M. A. **102**: 1470-1471 (May 5) 1934.

Special Articles

EQUIPMENT FOR AIR CONDITIONING

EMERY R. HAYHURST, M.D.
AUBREY I. BROWN, M.E.
Professor of Heating and Ventilating, Ohio State University
COLUMBUS, OHIO
AND
RICHARD KAHN, B.M.E.
DAYTON, OHIO

In the first and second reports of this committee, the purposes and objectives of air conditioning have been set forth by Yaglou,[1] one of the members of this committee. The control of conditions affecting comfort, health and efficiency in an artificial space environment involves a number of physical, chemical, biologic, and even psychic factors for which tentative standards have been suggested by various more or less authoritative groups.[2]

"Air conditioning" is the present term adopted for covering these factors but, as commonly used, this term does not embrace other environmental conditions, such as insulation, radiation, illumination and noise, which may be important collateral factors.

The present report deals solely with the equipment designed for procuring suitable conditioning of the air. A subsequent committee report will consider the instruments and procedures suitable for examining air conditions found or produced.

The practice of air conditioning in the more modern sense began about thirty years ago in industries in which the conditions of the air, mainly the temperature, humidity and dust content, were found to affect the quality of the product or the rate of production. However, the centrifugal fan for impelling or extracting air to and from large buildings is said by Bedford[3] to have been invented by Desagulier more than 200 years ago, and artificial humidification has been used, for example, in cotton textile works for a long period.

In recent years it has been found that "manufactured weather"[4] may be profitably applied to theaters and other places of public assembly, where the investment has proved justified by increased patronage resulting from greater comfort. Increase in revenue has been the prime motive for applying air conditioning to stores, hotels, cafeterias, railway passenger cars and office buildings. Comfort and health have been the chief motives in schools, churches, lodge halls and the like. Added to these reasons, safety (in the use of anesthetics) and other special clinical considerations have appealed to the hospital. More recently, interest has been manifested in the air conditioning of private offices and residences, where the results are valued not in terms of financial profit but in terms of improved comfort or health.

Air conditioning, in general, involves control of the following factors: temperature, humidity, air motion, air distribution, dust, bacteria, odors and toxic gases. Of these, the first three—temperature, humidity and air motion—are usually the most important, while dust, bacteria and toxic gases present special problems (chiefly industrial), and air distribution and control of odor pertain to all air conditioning.

BASIC EQUIPMENT

Any discussion of equipment for the procurement of air conditioning must be built around continual references to certain widely used procedures and appliances. Figure 1 diagrammatically presents the conditioning equipment and procedures necessary to control the aforementioned factors during all seasons, showing the primary and essential steps of filtering, preheating humidifying, heating, or cooling and dehumidifying which precede the circulation and distribution of conditioned air as varied conditions might require.

Entirely distinct equipment is shown in the diagram for winter and summer requirements. In actual practice, much of the same equipment may be used in any season. The filter that cleans the air in winter performs the same operation in summer. The spray that humidifies in winter may be used through modification to dehumidify in summer. All these items required in the attainment of satisfactory air conditioning are now discussed.

FILTERS

The impurities removed by filters include carbon (soot) from the incomplete combustion of fuels in furnaces and automobile engines, particles of earth, sand, ash, automobile tires, stone, wood, rust and paper, threads of cotton, wool and silk, bits of animal and vegetable matter, pollen and some bacteria.

The commonest types of apparatus for cleaning air are dry filters. In these the air is filtered through screens made of felt, cotton fabric, cellulose or glass wool. The air is passed through so many devious channels that most of the dust is entrained on the way. Because of the close texture of the filtering mediums the velocity of the air passing through the filter must be low. This necessitates a relatively large surface, and in order to increase the effective filtering area without increasing the dimensions of the filter the filter mediums are usually arranged to form interstices (pockets).

Dry filters in which felt or similar materials are employed usually depend on vacuum cleaning for reconditioning, but many inexpensive dry filters are discarded when they become clogged and are replaced.

The use of a viscous fluid, such as oil, for the retention or collection of dust is a familiar practice. The housewife uses oiled cloths for "dusting" about the house. In cleaners employing the viscous film principle, air is drawn through a device containing a series of deflecting surfaces, usually of metal, these surfaces being coated with a viscous oil. As the air impinges against these surfaces it is deflected and passed, but the heavier particles of dust or foreign matter adhere to the viscous film.

Viscous filters are of the automatic or nonautomatic type. The nonautomatic unit or cell type consists of two panels of metal screen enclosed in a frame of convenient size for handling. Filling the space between the front and back screens are packed mats of split or crimped wire or glass wool, which is impregnated with the viscous oil.

This is the third report of the committee established by the American Medical Association to study air conditioning. The first report appeared in THE JOURNAL May 15, 1937, p. 1708, and the second report September 18, p. 945. The committee includes Carey P. McCord, Detroit, chairman; Emery R. Hayhurst, Columbus, Ohio; William F. Petersen, Chicago; Horatio B. Williams, New York, and Constantin P. Yaglou, Boston.

1. Yaglou, C. P.: The Physical and Physiologic Principles of Air Conditioning, J. A. M. A. **108**: 1708-1713 (May 15) 1937; Part II, ibid. **109**: 945-950 (Sept. 18) 1937.

2. American Public Health Association: Report of the Committee on Ventilation and Atmospheric Pollution (Section on Industrial Hygiene), Year Book 1936-1937, p. 82; American Society of Heating and Ventilating Engineers; Guide, 1937, pp. 81-83.

3. Bedford, T.: Modern Principles of Ventilating and Heating, London, H. K. Lewis & Co., Ltd., 1937, p. 7.

4. Brezina, Ernst, and Schmidt, Wilhelm: Das künstliche Klima in der Umgebung des Menschen, Stuttgart, Ferdinand Enke, 1937.

When these filters become clogged they must be cleaned out and reoiled. A more recent development is the use of units of light and inexpensive construction which are discarded and replaced when dirty.

Automatic filters of high air capacity are designed to be self cleaning. They consist of an endless vertical chain or belt of filter material arranged over a top and bottom sprocket, and moving continuously. Clean surfaces are constantly presented to the air stream, and dirtied sections pass through a tank of viscous oil at the bottom to wash off the dirty oil and recoat the belt.

The air washer is similar in effect to the cleansing action of a rainstorm on the atmosphere. Spray nozzles are placed in the path of the air, and water is discharged from them in the form of a fine mist. The incoming air is thus brought into intimate contact with the water. At the outlet to the washer are a series of zigzag plates which cause the air to change direction violently, so that the dirt is thrown out from the air by its inertia. Recent developments offer the promise of electrical precipitation as a means for the removal of ordinary dusts and bacteria.

WINTER CONDITIONING

Heating.—In air conditioned spaces, direct radiation from steam or hot water radiators may be provided to make up the loss of heat from the building. In these cases the forced air circulation system supplies outdoor air in quantities sufficient for ventilating purposes only. This outdoor air must be heated to room temperature before its introduction into the occupied space.

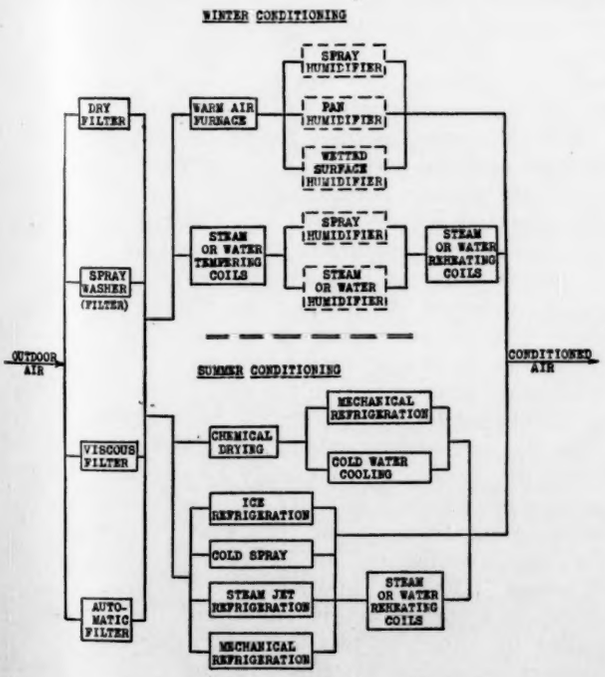


Fig. 1.—Essential steps in air conditioning.

When no direct radiation is used as a source of heat, the desired room temperature is maintained by air circulated over heated surfaces as in a furnace located elsewhere (indirect heating). A large part of the warmed air is recirculated within the building and only enough outdoor air added to provide "freshness" and freedom from odors. The reasons for this are obviously fuel economy and the size and initial cost of equipment.

Humidifying.—Certain industrial processes demand a humid atmosphere the year round. As discussed in the two previous reports of this committee [1] the necessity for humidifying or moistening the air for comfort conditioning (used only during the winter) has not been substantiated. A relative humidity of from 30 to 60 per cent is regarded as a desirable figure for the most healthful conditions. In cold weather, humidities above 30 per cent will cause condensation on single

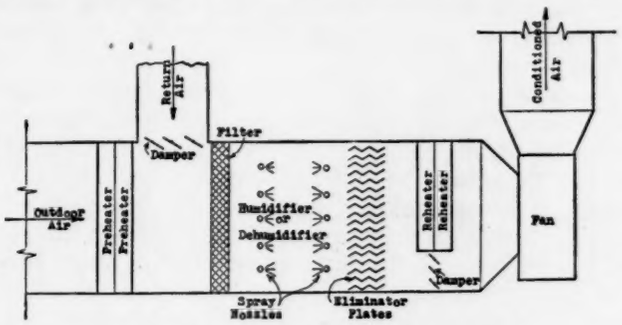


Fig. 2.—Spray type air conditioning apparatus.

windows, however, and for this reason humidities above this figure should not be provided unless provision is made against condensation by the installation of double glass windows.

In order to preclude the possibility of freezing the water used for humidifying, it may become necessary to preheat the outside air entering the conditioning system.

Humidifiers may be classified as direct, which introduce moisture directly into the room, or indirect, which introduce moistened air. Surface humidifiers are the simplest types of moistening devices. These consist of pan type containers providing a large water surface and equipped with some means of heating the water in order to force evaporation. This heat may be applied by electricity, steam or hot water. When heat is not applied directly to the water, the heated air may be directed across the surface of the pan. This area may be increased by the use of fabric strips dipped into a supply of water and wetted by the capillary action through the material. When a large volume of air is to be moistened it is difficult to provide sufficient surface for adequate capacity, and other methods of humidification must be adopted.

In large central air conditioning systems a spray humidifier may be used to humidify the air. The air may be preheated before entering the humidifier so that its ability to evaporate moisture is increased, or the spray water with which the air is brought into intimate contact may be heated to accomplish the same purpose. When there is no central humidifier in the system, room humidifiers may be used. In these the air is passed through a direct spray, where a part of the spray water is evaporated.

In the simplest spray humidifying system the water is furnished from a constant source, such as city water. The spray may be of the direct atomizing type, in which, by means of properly designed nozzles, the water is broken up into fine particles, or of the target spray type, in which a fine stream of water under pressure impinges on a flat surface or target to be broken up into a spray. That part of the spray which is not evaporated is permitted to run to waste.

Any spray system in which water is run to waste must atomize as completely as possible to provide for the evaporation of the maximum amount of water. In order to produce fine atomization, small openings are

necessary in the nozzles, which involve the danger of occasional clogging. Self-cleaning nozzles have been recently developed that materially reduce this hazard. Although all spray systems in which the water is not recirculated are wasteful of water, they are normally more economical to use in smaller installations. In large conditioning units requiring larger quantities of water the wastage may be excessive, and then it is more economical to install central humidifiers in which the water is recirculated.

Some atomizing units, in order to increase their moistening capacity, permit the spray to impinge against a heated surface, forcing its evaporation by that method, or the spray may be directed against a rotating disk, where it is mechanically separated into fine particles by the contrifugal action. One of the simplest methods of humidification is the direct introduction of steam into the air. Steam is little used for comfort conditioning because of the disagreeable odor usually accompanying it. In industrial applications, however, it is frequently used.

SUMMER CONDITIONING

Cooling.—The phase of air conditioning that has been of greatest public interest in recent years is "cooling." In considering the comfort-cooling air it is perhaps best to think of cooling not as pure refrigeration of the air but as the production of a cooling effect. This cooling effect on the human body may be produced in four ways, separately or in combination; by lowering the dry bulb temperature of the air, by dehumidifying the air, by evaporative cooling (which is functionally dependent on the humidity of the air) or by increasing the air movement. Lowering the dry bulb temperature alone may result in a cold, clammy feeling which is undesirable. Dehumidifying only, without cooling, produces hot, dry air that may also be undesirable. Moderate reduction in temperature combined with adequate dehumidification is usually considered best for comfort. The use of fans for alleviating discomfort in warm weather is a common practice but the higher air velocities usually created are objectionable in considerations of comfort.

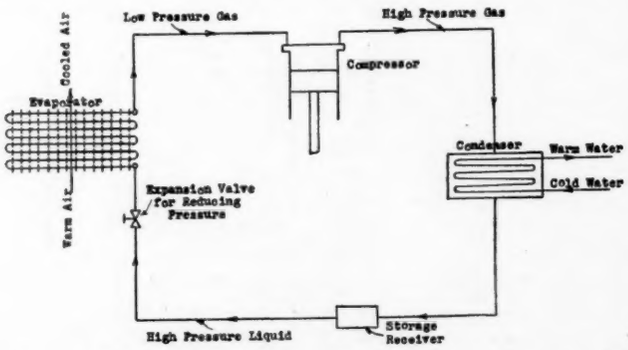


Fig. 3.—Compression refrigeration cycle (with water cooled condenser) applied to air conditioning.

If air is passed through a water spray in which the water is continually recirculated, the dry bulb temperature of the air will be lowered, for the air will give up a part of its heat in order to evaporate water. Under ideal conditions the air would continue to give up its heat to evaporate water until it became saturated with water vapor, so that at the same time that the dry bulb temperature is dropping the humidity of the air is increasing. In hot and dry climates this system of evaporative cooling therefore proves most successful, but it is of no value in hot and humid climates.

In localities where water from deep wells or other sources is available at low temperatures in sufficient quantities, a cheap and simple method of cooling is provided. The air is simply passed over finned tube coils, similar to those used for heating work, through which the cold water is flowing. In many localities wells supply sulfurous waters which emit objectionable odors the concentration of which is increased when the water temperature rises after it is used for cooling purposes. This situation is ordinarily controlled in some sections by the use of a closed system associated with the return of the water to another underground water bed by means of a second well.

When cold water is not available, the water flowing through the coils may be cooled by the use of ice. The ice is stored in a bunker, and the water is sprayed over the ice to be cooled, the cooled water then passing through the coils. Ice cooling equipment usually costs less than that necessary for any other method except when well water alone is used. The hourly cost of operation, however, is fairly high, so that the use of ice is not economical when the season of operation is long.

Mechanical systems of refrigeration are most extensively used at the present time. A refrigerating machine is simply a mechanical device for the removal of heat from any system.

Certain liquids have the property of boiling at low temperatures. To assure this boiling, heat is commonly necessary. If air or water is passed over an evaporating substance, any heat required to complete the boiling process will be taken from the surrounding air (or medium) and the temperature of this air will be thereby lowered. Advantage of this fact (latent heat) is taken by the use of evaporators of some types.[5]

A refrigerating machine for air conditioning consists of three essential parts: (1) a compressor, which withdraws the gaseous refrigerant from (2) an evaporator or cooler and delivers it to (3) a condenser at a higher pressure and temperature so that its heat can be removed by air or water at ordinary temperatures. Thus the gas is condensed into a liquid and returns to the evaporator through an expansion valve, which allows the refrigerant to pass at such a rate as to maintain a predetermined temperature in the evaporator coil. Finally, in the evaporator the refrigerant boils, abstracting heat from the surrounding medium to produce refrigeration. Thus the system is completely closed and the same refrigerant, in small quantity, constantly recirculated in order to conserve it. The commoner refrigerants used for air conditioning are "Freon," carbon dioxide, "Carrene," "Dieline" and methyl chloride.

When refrigeration is employed, the air may be cooled by either of two methods using the direct or indirect expansion systems. In the direct expansion system, usually employed in smaller installations, the evaporator, which is a continuous bent tube finned similarly to a finned heating coil, is placed in direct contact with the air to be circulated. In the indirect expansion system the evaporator is used to cool water. The actual cooling of the air is brought about either by bringing the air into intimate contact with the cold water in spray chambers through which the air is circulated or by passing the cold water through finned tubes placed in the path of the air.

5. American Society of Heating and Ventilating Engineers' Guide, 1937, pp. 195-202 (New York).

Another system of refrigeration, also operating on the principle that when evaporation takes place heat is absorbed, is known as the steam ejector system. This uses water as the refrigerant. Water under a vacuum vaporizes at low temperatures. Steam discharged, or ejected, from properly designed nozzles will produce a high vacuum. In the steam ejector system water is contained in an evaporator in which a high vacuum is maintained by ejection of steam. Because of the high vacuum, part of the water will flash into steam, the heat required for the vaporization coming from the rest of the water, which is cooled to a point dependent on the vacuum maintained. The water thus cooled is circulated for air cooling purposes in the same way as water cooled by ice or mechanical refrigeration. The steam jet system requires a large amount of condenser water, approximately three times that required for mechanical refrigeration. It also requires a supply of high pressure steam. In many cases the steam may be already available as when it is used for the production of power or process work. This system is economically justifiable when the steam and a copious supply of cheap water are available.

Dehumidifying.—Dehumidification is an essential part of summer air conditioning. Moisture is precipitated when the air temperature is lowered to such a point that condensation takes place. The temperature at which condensation will take place is known as the dew point. The air under artificial conditions may be cooled to the dew point temperature either by maintaining a sufficiently low temperature in the evaporator coils over which the air passes or by cooling the spray water of the dehumidifier below the dew point of the air temperature.

According to the American Society of Heating and Ventilating Engineers' Guide,[5] dehumidification may also be accomplished by absorption or adsorption of the moisture contained in the air. Absorption implies a change in the chemical or physical structure of the absorbing material in the process of dehydration, while adsorption is purely a surface action. Sulfuric acid is a common type of absorber. Adsorbers include lithium chloride, calcium chloride, silica gel, activated alumina, lamilisilite, or any of the halides.

Silica gel is a colloidal form of silicon dioxide made from sodium silicate and acid. It is a hard glassy material with the appearance of clear quartz sand. The crystals are highly porous, with the voids constituting 40 per cent by volume, although the pores are microscopic in size. Silica gel possesses the ability to adsorb a large quantity (up to 25 per cent of its own weight) of moisture from the air without any change in volume, structure or composition. After the silica gel has adsorbed moisture to the limit of its capacity, the water may be driven out by the application of heat. This cycle can be repeated indefinitely. In the process of adsorption heat is liberated, raising the temperature of the dry air. This heat may then be removed from the highly dehumidified air by extended surface cooling coils.

Silica gel units usually contain two compartments. Each compartment has several trays of adsorbing material supported on screens staggered so that a part of the air to be dehumidified passes through each bed of silica gel. While one compartment is adsorbing moisture the other is being reactivated by passing hot air from a gas burner through the material in order to dry it. Dampers automatically shift the air flow from one compartment to the other at the end of each cycle of operation.

Activated alumina contains about 90 per cent of aluminum oxide, which will adsorb nearly 100 per cent of the vapor in the air and up to 10 per cent of the weight of the adsorbing material. The application is very similar to that of silica gel; the material is exposed to the air flow and, after reaching about 75 per cent saturation, is reactivated by driving off of the adsorbed moisture by the application of heat.

Calcium chloride is the cheapest and most widely used dehumidifying substance. However, its characteristics are such that relative humidities less than 30 per cent are difficult or impossible to obtain.

The cycle of operation for liquid adsorbers is fundamentally the same as for the solid adsorbers such as silica gel and activated alumina. In systems employing liquid adsorbers such as sodium, lithium or calcium chloride, the liquid adsorber is sprayed into the air. The adsorbing liquid, because of its lower vapor pressure, removes moisture from the air with which it is in contact. As in the solid adsorption systems, the removal of moisture is accompanied by a rise in temperature of the air. However, in this case the mass of liquid contained in the adsorber tends to keep down the rise in temperature.

As moisture is removed from the air, the concentration of the liquid adsorber is weakened so that its adsorbing capacity is reduced. Regeneration, or the driving off of the excess liquid, must be performed, a process similar to the driving off of the adsorbed liquid in the solid adsorber. However, with the liquid adsorber [5] a definite condition of concentration may be maintained by continuously withdrawing a small portion of the liquid for intensive concentration and adding this concentrate to the mass of adsorbing liquid. The vapor pressure of the mass may be held fairly constant by this method of continuous regeneration, and the relative humidity of the leaving air will be held to a definite point.

Regeneration may be accomplished by raising the temperature of the adsorbing liquid to a point above the boiling point for the particular concentration. As the salts in the solution do not vaporize, they are not carried off in the boiling process, and the concentration is increased.

Air Circulation and Distribution.—The objects of ventilation (the addition of outside fresh air), as agreed on by engineers and physiologists, are usually to remove odors, toxic substances, heat and moisture. There is no agreement among authorities as to how much fresh air must be introduced into a room for each person to give adequate ventilation. The lowest figure that will insure freedom from body odors is usually taken as 10 cubic feet per person per minute.

In order to provide this necessary ventilation, most air conditioning systems are arranged to recirculate a large part of the air from the occupied space and to take from outside the quantity necessary for "ventilation." The unit conditioner fan draws air through the conditioner and delivers it directly into any given room or space. The central conditioning fan discharges into a series of ducts which distribute the air to the rooms. The total quantity of air to be handled in either case depends on the amount of heat to be added or removed and the permissible temperature difference between the entering air supply and the desired room temperature.

This point of temperature differential between the air introduced and the room temperature is particularly important in summer cooling. A blast of icy air cools a room but may be objectionable and harmful to its occupants.

In comfort-conditioning, air is introduced into the room at temperatures varying from 5 to 30 degrees below the desired room temperature. Any of several methods may be adopted so that this air may be introduced into the occupied space without causing uncomfortable drafts. In order to remove moisture from the air by condensing it out, it may be necessary to cool it to a very low temperature and then reheat it to a suitable temperature. Reheating is often accomplished by mixing cool air with warm recirculated air just before introducing the air into the room.

If air is introduced into the room in a horizontal direction at a very high velocity, a great turbulence will be created that will mix the cold entering air with room air. High velocity nozzles or grilles are used to mix the air in this way at the ceiling height, whence it descends to the floor level owing to the greater density of the colder air. The limiting velocity that can be used in jets of this type is the velocity at which noticeable noise is created. It is possible, on the other hand, to use low entering velocities when there are a large number of inlets into the room, so that the distribution is uniform.

No matter what method is adopted for distribution of air, the air velocity in the occupied zone should not exceed 40 feet per minute in winter. Somewhat high air velocities are permissible during the summer period.

SMALLER AIR CONDITIONING UNITS

Three basic types of cooling units for smaller installations are now on the market, so-called self-contained, remote and central. The self-contained unit, commonly in the form of a cabinet, is placed in the room or enclosure to be serviced. Depending on its completeness, it controls one or more of the factors listed in the first part of this paper. The remote type has the refrigerating mechanism located at some remote place (closet or the like), from which the refrigerant is piped to cooling coils inside small cabinets, which may stand on the floor or be suspended from the ceiling or walls of the room to be cooled. The central type is a self-contained unit of larger capacity and usually located in the cellar, whence it transmits the conditioned air through a duct system to the rooms or spaces to be serviced.

COMMENT AND SUMMARY

This committee report briefly presents the mechanical requirements necessary to obtain suitable control of the following factors in air conditioning: temperature, humidity, air motion, air distribution, dust, bacteria, odors and toxic gases. It is emphasized that at the present time some commercial interests are stressing excessively low summer temperatures and are permitting high air velocities in air conditioned spaces, in comparison with outdoor conditions, and in some cases are failing to provide adequate dehumidifying facility, a most important item in proper summer air conditioning. Much of the air conditioning now being installed is under the control of operators and proprietors who have such a complete misunderstanding of the requirements of the human body that it promotes discomfort and jeopardizes health for persons exposed to these "artificial climates."

FIRST ANNUAL SUMMARY OF FOURTH OF JULY INJURIES

SECOND SERIES

From 1903 to 1916 the American Medical Association presented annual summaries of injuries resulting from the celebration of the Fourth of July. Since 1916, which was the first year without a single case of tetanus, these reports have been discontinued. Unfortunately in recent years a considerable increase in the number of injuries has occurred; it seems expedient therefore to renew the annual reviews.

DEATHS

This year there were twenty deaths reported as due to the celebration of the Fourth of July with fireworks or firearms. The distribution by states is given in table 1. Burns from fireworks resulted in the death of seven youngsters, gunshots were responsible for the death of four boys, two men were drowned after their boat had been wrecked by an exploding firecracker, a toy cannon explosion killed a man, and a fire caused by explosion of a display of fireworks in a store caused the death of six women and girls.

TABLE 1.—*Deaths by States*

State	Number of Deaths
California	1
Florida	1
Idaho	6
Maryland	1
Massachusetts	2
New Jersey	1
New York	3
Ohio	1
Rhode Island	1
Texas	1
Utah	2

The worst single accident of the year occurred in Nampa, Idaho, on July 1. A shelf of fireworks in a drug store caught fire and exploded with thirty people in close proximity. This tragic display resulted in the death of six and the serious injury of several others. Another strange accident occurred, according to newspaper reports, on Cayuga Lake, N. Y. According to the story told to authorities, three men started celebrating by shooting cherry bombs and firecrackers along the shore of the lake, finally pushing out into the lake in a rowboat. A large firecracker exploded under the boat, tearing a hole in it, and two of the three men were drowned.

TETANUS

Only two cases of tetanus were reported this year, one in Minnesota and one in Ohio. Both patients recovered. The small number is due, however, not so much to lack of opportunity for tetanus to occur as to the splendid cooperation of physicians, police, hospitals and first aid units in giving tetanus antitoxin immediately following an injury. Evidently all are thoroughly cognizant of the necessity for giving tetanus antitoxin even in the presence of what appear to be relatively slight injuries.

INJURIES

Table 2 lists the number of injuries by type and cause. The total number of injuries recorded for this Fourth of July celebration numbered 7,205. Obviously this figure errs on the side of underestimation. Thus, although 4,292 questionnaires were sent out to hospitals

requesting them to list the Fourth of July injuries treated, only 2,463 were returned. In addition, doubtless more injuries were treated in first aid stations or by physicians in their offices than were treated in hospitals. The total number of injuries, therefore, was probably far in excess of those which were actually recorded.

Comparative figures with other years since 1916 are not available and hence any attempted contrast at this time would be futile. Attention, however, should be drawn to the fact that in 1916, the last year of the previous annual reports, there was not a single case of tetanus reported.

Study of the table in the light of available information discloses several important points. Thus New Jersey, which only this year received the benefit of a state law against fireworks, had only seventy-two injuries, while Pennsylvania with only 2.4 times the population (1930 census) and without such a state law had 991 injuries. In fact, many of the individual reports from New Jersey indicated the "bootlegging" of fireworks across the state line from Pennsylvania, and so the latter state may well be considered to have contributed materially to those injuries from fireworks which actually occurred in New Jersey. Many individual hospital questionnaires from New Jersey stated voluntarily that this year for the first time their hospitals treated no injuries from fireworks, in contrast to previous records of from 100 to 150.

Michigan, which also possesses a state law against fireworks, had only 190 injuries, while Illinois without such a state law, and a population approximately 1.5 times as large, had 485 injuries.

The Southern states, as a group, reported few injuries from fireworks. This is due principally, as was mentioned on numerous questionnaires, to the fact that in most regions of the South there is no fireworks celebration of the Fourth of July. Fireworks, however, are used at Christmas time, and many of the hospitals reported that serious injuries frequently occur at that time. (An example is that of Dec. 24, 1936, at Asheville, N. C., where a preview of the Nampa, Idaho, tragedy occurred. A fireworks display in a downtown store exploded, killing several people and burning others.)

In spite of the fact that several of the principal cities of the country have ordinances against the sale of fireworks inside their corporate limits, most of them had a large number of injuries. Table 3 lists the injuries for several of them and their rates per hundred thousand. Again it is obvious that local regulations are only slightly effective in preventing such injuries, since the forbidden fireworks can easily be purchased outside the city limits and brought in by automobile.

SERIOUS INJURIES

In addition to the deaths and cases of tetanus, newspaper clippings and hospital questionnaires recorded a considerable number of persons, mostly children, so seriously injured that they will bear the scars of their experience for the rest of their days. There were many bad burns, chiefly from sparklers, in many instances requiring prolonged and persistent hospital care and often resulting in permanent scarring. In one serious accident in Jamaica, N. Y., according to newspaper clippings, three high school students were seriously injured by experimenting with certain chemicals for celebration purposes. Both hands of one boy were amputated and one hand of another. The eye injuries from the standpoint of numbers and permanent disability were perhaps the most appalling. Table 2 lists them by state but can give no true picture of their individual significance.

TABLE 2.—*Types and Causes of Injuries*

State	Type of Injury					Cause of Injury		
	Burns and Lacerations	Loss of Eye	Injury to Eye	Loss of Finger, Hand, or Other Member	Total Injuries	Crackers and Torpedoes	Display Fireworks*	Cannon and Firearms
Alabama	7	..	...	..	7	6	...	1
Arizona	29	1	2	..	32	30	1	...
Arkansas	6	..	1	..	7	7	...	...
California	458	..	20	7	485	468	14	3
Colorado	114	1	3	1	119	117	1	1
Connecticut	101	..	3	..	104	93	...	11
Delaware	23	..	2	..	25	23	1	1
Dist. of Columbia	73	..	5	..	78	76	2	...
Florida	21	..	2	..	23	21	...	2
Georgia	9	..	...	..	9	6	3	...
Idaho	51	1	...	..	52	48	3	1
Illinois	465	1	18	1	485	445	27	13
Indiana	263	..	14	1	278	211	50	17
Iowa	67	..	6	3	76	71	2	3
Kansas	90	..	3	..	93	91	1	1
Kentucky	58	1	2	..	61	50	...	10
Louisiana	12	..	...	..	12	12	...	...
Maine	64	..	2	1	67	62	2	3
Maryland	114	..	9	..	123	113	7	3
Massachusetts	351	..	23	2	376	357	4	15
Michigan	184	..	6	..	190	188	2	...
Minnesota	77	..	12	..	89	80	7	2
Mississippi	...	..	...	..	...	...	...	...
Missouri	497	1	10	2	510	475	3	32
Montana	39	1	10	..	50	48	1	1
Nebraska	44	..	5	..	49	44	5	...
Nevada	...	..	...	..	...	...	...	...
New Hampshire	34	..	3	3	40	38	2	...
New Jersey	70	..	2	..	72	70	1	1
New Mexico	...	1	...	..	1	1	...	...
New York	1,322	1	46	2	1,371	1,302	52	17
North Carolina	2	1	...	1	4	1	2	...
North Dakota	11	1	2	..	14	14	...	...
Ohio	330	1	20	2	353	320	18	15
Oklahoma	90	2	8	1	101	91	6	4
Oregon	42	..	...	3	45	45	...	...
Pennsylvania	955	1	30	5	991	948	24	19
Rhode Island	372	..	9	..	381	379	2	...
South Carolina	...	..	...	..	...	...	...	...
South Dakota	9	..	...	..	9	9	...	...
Tennessee	1	..	...	..	1	...	...	1
Texas	32	..	1	..	33	28	3	2
Utah	27	..	2	2	31	26	3	2
Vermont	18	..	2	..	20	19	1	...
Virginia	18	..	...	..	18	18	...	...
Washington	147	1	5	..	153	138	14	1
West Virginia	27	..	1	..	28	24	3	1
Wisconsin	88	..	4	..	92	90	1	1
Wyoming	9	..	1	..	10	7	2	1
Unknown	37	..	...	..	37	36	1	...
Totals	6,858	16	294	37	7,205	6,746	271	185

* Includes sparklers, rockets and roman candles.

TABLE 3.—*Injuries in Principal Cities*

City	Injuries	Rate per 100,000
New York	524	7.56
Chicago	225	6.66
Philadelphia	201	10.30
Detroit	62	3.95
Los Angeles	45	3.63
Cleveland	64	7.11
St. Louis	322	39.17
Baltimore	56	6.95

COMMENT

In spite of the apparent effectiveness of the campaign by the American Medical Association which terminated twenty-one years ago, there has been an evident increase in the misdirected celebration of Independence Day by dangerous fireworks. This increase has occurred in

spite of the fact that municipalities and good citizens generally have continued their efforts to regulate the sale and use of fireworks. Part of the increase may be due to lack of social consciousness of this dangerous activity. Part seems to be due to the fact that in spite of legal regulations the almost universal use of the automobile has made city limits and even state lines no longer any material barrier to the transportation of much illegal material. All of the previous reports of THE JOURNAL on this subject stated that "the responsibility clearly rests with city governments." Evidently this no longer holds strictly true, since city governments cannot enforce regulations outside their limits and transportation is now too easy.

Special Clinical Article

A SIX YEAR STUDY OF THE CLINICAL EFFICACY OF VARIOUS DIGITALIS PREPARATIONS

CLINICAL LECTURE AT ATLANTIC CITY SESSION

WILLIAM D. STROUD, M.D.
AND
JOSEPH B. VANDER VEER, M.D.
PHILADELPHIA

Although an excellent book on digitalis has recently been published [1] and numerous papers have been written concerning the efficacy of various glucosides of digitalis,[2] confusion still exists in the mind of the average practitioner as to the indications for the use of digitalis, the best method of its administration and the most efficient type of preparation to be used. Unfortunately, from time to time various articles with conflicting opinions as to the indications and contraindications for digitalis have appeared in the medical periodicals. Furthermore, the problem has been rendered more difficult by the more or less generalized change from the tincture to use of the powdered leaves in tablet, capsule or pill form, the introduction of the term cat unit [3] in expressing biologic potency and dose and the pressure of salesmanship of the manufacturing drug firms as to the special merits of their respective preparations.

The purpose of the present paper is (1) to emphasize a few of the main indications and contraindications for digitalis, (2) to review briefly its mode of action, the dose and methods of administration and (3) to discuss the therapeutic merit of several special preparations of the isolated digitalis principles (glucosides), compared with whole leaf preparations, as determined in a clinical study during the last six years.

Read in the General Scientific Meetings at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 7, 1937.

This work was done through the Robinette Foundation of the University of Pennsylvania and the M. W. Stroud Jr. Fellowship in Cardiology of the Pennsylvania Hospital.

1. Luten, Drew: The Clinical Use of Digitalis, Springfield, Ill., Charles C. Thomas, Publisher, 1936.

2. Baker, J. P., Jr., and Bloom, Nathan: Clinical Studies on Verodigen, a Digitalis Glucoside, Ann. Int. Med. **10**: 605-620 (Nov.) 1936. Stroud, W. D.; Bromer, A. W.; Gallagher, J. R., and Vander Veer, J. B.; A Clinical Comparison of a Purified Glucoside and Whole Leaf Preparations of Digitalis, Am. J. M. Sc. **187**: 746 (June) 1934. Stroud, W. D.; Livingston, A. E.; Bromer, A. W.; Vander Veer, J. B., and Griffith, G. C.: The Use of Verodigen (a Digitalis Glucoside) in Cardiovascular Disease, Its Biological Assay and Pharmacological Action, Ann. Int. Med. **8**: 710-726 (Dec.) 1934.

3. A cat unit represents the minimum amount of digitalis which is required per kilogram of body weight to kill a cat when injected slowly and continuously intravenously. It represents 1½ grains (0.1 Gm.) of powdered leaves, or 1 cc. (15 minims) of tincture.

INDICATIONS

More than a hundred years ago digitalis lost favor as a therapeutic agent because of its inability to slow tachycardias due to fever, and yet today many physicians prescribe digitalis with the hope of slowing rapid heart action due to fever, thyrotoxicosis, hypersensitivity of the sympathetic nervous system and peripheral circulatory failure. This practice is especially common in connection with surgical procedures, digitalis being given postoperatively in some places almost as a matter of routine.

Needless to say, digitalis proves of no advantage in the treatment of such conditions except in certain cases of thyrotoxicosis accompanied by cardiac disease of different etiology (such as a rheumatic valvular defect associated with congestive heart failure) or in cases of pneumonia complicated with auricular fibrillation or auricular flutter. As shown in the study of pneumonia at Bellevue Hospital,[4] digitalis when indicated in the treatment of this disease should be given only in divided doses, since massive doses may prove distinctly dangerous.

During the last two decades, several investigators [5] have called attention to the differential diagnosis between circulatory failure due to disease of the heart and circulatory failure resulting from collapse of the peripheral vascular system. As described by Harrison,[6] "The clinical picture of peripheral circulatory failure (shock, collapse) is characterized by weakness as the chief subjective phenomenon, and by ashen pallor, cold clammy skin, tachycardia, weakness of the pulse, diminution in systolic pressure." In emergencies of this character, digitalis proves of but little—if any—benefit, and, through recognition of this fact, the formerly rather prevalent procedure of administering this drug postoperatively (in ridiculously small doses) to patients with circulatory failure of peripheral origin has been abandoned. Digitalis is seldom indicated in emergencies unless there is definite evidence of right or left ventricular failure, and then in order to secure clinical benefit within a few hours large doses are necessary.

Although some clinicians still question the statement that proper digitalization improves tonicity and contractility of the myocardium, it is our opinion, as stated in a previous publication by one of us,[7] that the therapeutic benefit of digitalis is effected in one or all of three ways, as follows:

1. By slowing the heart rate, that is, by lessening the number of ventricular systoles per minute, the diastolic period is lengthened, whereby ventricular filling is rendered more complete, and the heart muscle fibers are afforded more rest; and, as a consequence, there may result a greater expulsion of blood into the circulation with each systole. . . .

2. By increasing the cardiac tone, thereby relieving or preventing dilatation of the heart chambers beyond the physiologic limit, the optimum cardiac output is made possible. When the length of the heart muscle fibers is increased beyond a certain limit, the cardiac output is decreased and "heart failure" is believed to result. Restoration of the fibers to a

4. Niles, W. L., and Wyckoff, John: Tr. A. Am. Physicians **45**: 57, 1930; Am. J. M. Sc. **180**: 348 (Sept.) 1930. Wyckoff, John; Du Bois, E. F., and Woodruff, I. O.: The Therapeutic Value of Digitalis in Pneumonia, J. A. M. A. **95**: 1243 (Oct. 25) 1930.

5. Atchley, D. W.: Rôle of Peripheral Circulatory Failure in Clinical Medicine, New England J. Med. **213**: 861-868 (Oct. 31) 1935. Eggleston, Cary: Drugs Used in the Treatment of Circulatory Failure in Acute Infectious Diseases, J. A. M. A. **107**: 1213-1215 (Oct. 10) 1936. Meek, W. J.: Present Day Conception of Shock, Northwest Med. **35**: 325-334 (Sept.) 1936.

6. Harrison, T. R.: The Pathogenesis of Circulatory Failure, New England J. Med. **215**: 479-482 (Sept. 10) 1936.

7. Stroud, W. D., and Bromer, A. W.: Indications for Digitalis Therapy in Cardiovascular Disease and Its Method of Administration, J. M. Soc. New Jersey **27**: 940 (Dec.) 1930.

shorter length is a factor in bringing about an increase in cardiac output, with the possible return of circulatory efficiency.

3. Through increase of the extent of ventricular contraction, there tends to be an increase in cardiac output when heart failure is present. . . .

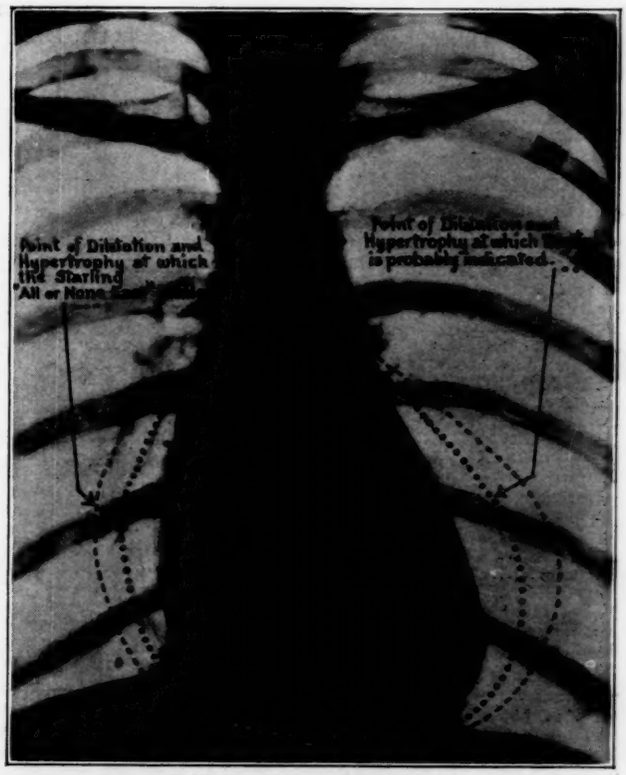
If the effects mentioned are to be expected from digitalization, the question arises as to when in the course of progressive cardiovascular disease the patient should be digitalized. Christian [8] expressed the opinion that, as soon as a diagnosis has been made of cardiovascular disease (particularly hypertension or valvular disease) which may place an additional burden on the myocardium, the patient should be digitalized and digitalization should be maintained throughout the remainder of life. On the other hand, Harrison and Leonard [9] (in a study of dogs) and Burwell, Neighbors and Regen [10] (in a study of human beings) found that a reduction in output of the normal heart occurs with full digitalization. Certain studies [11] suggest that if the heart is normal or has perhaps a slight degree of dilatation and hypertrophy, digitalis lessens the efficiency of the heart muscle and also decreases the flow in the coronary arteries. The same studies indicate that there may be a stage in the progressive dilatation and hypertrophy of a laboring myocardium at which digitalis seems to improve the efficiency of the heart muscle and also the flow from the coronary sinus into the heart. Hypertrophy and dilatation unchecked tend toward a point where a certain optimal length of the fibers of the heart muscle is exceeded and a decrease in cardiac output results (described by Starling [12] as the law of the heart), with gradual or sudden development of signs of heart failure. On the basis of this hypothesis, it is the physician's responsibility to estimate—through the patient's history, the physical appearances, electrocardiographic and x-ray studies and his knowledge of the usual progression of the various cardiovascular diseases—just when the stage has been reached (as shown in the accompanying illustration) at which digitalization will preserve optimum cardiac output through increase of tonicity and extent of ventricular contraction.[13]

It is our belief, therefore, that in the treatment of patients with progressive chronic cardiovascular disease digitalization should not be started as a matter of routine at the time of diagnosis but when, in the opinion of the physician, the pathologic processes have progressed to a point where digitalization may increase ventricular output and improve coronary flow.

METHOD OF ADMINISTRATION

The vast majority of patients can take digitalis by mouth. Although the emetic action of digitalis is not due to a direct irritant action on the gastric mucosa but is a reflex effect from the direct action of the drug on the heart (the impulses passing from the heart to the vomiting center in the medulla), occasionally psychic vomiting due to knowledge of the toxic gastric effects is encountered. Intravenous digitalis therapy is seldom indicated. Subcutaneous administration is necessary only in the presence of vomiting or unconsciousness or when the patient is unable to swallow. Rectal administration is seldom necessary.

It is generally admitted by physicians with experience in both methods of administration that tablets, capsules or pills of powdered digitalis leaves are much more practical than the tincture. In the first place, such preparations seem to maintain their potency better than the tincture, and, in the second place, the dosage is much more accurate, since even with the standard minim dropper the patient is apt to miscount the number of drops. The impossibility of accurate dosage in the absence of a standard minim dropper is well known to all who have tested the average medicine dropper supplied by the drug store.[14] Furthermore it is more convenient to carry tablets, capsules or pills than a bottle of the tincture.



Stage at which digitalization will preserve the optimum cardiac output.

According to our experience the large dose method of administering digitalis is seldom necessary. In emergency cases when there is no vomiting, full digitalization can be accomplished with tablets of standardized digitalis (or their equivalent in glucoside preparations) when given by mouth, in from 4½ to 6 grain (0.3 to 0.4 Gm.) doses every six hours, within twenty-four to thirty-six hours. In the average case of congestive heart failure, complete digitalization can be accomplished in from forty-eight to seventy-two hours by administration of 3 grains (0.2 Gm.) of digitalis three times a day. For an ambulatory patient with heart failure of mild or moderate degree, full digitalization can be accomplished for six or seven days by a 1½ grain (0.1 Gm.) tablet given three times a day. After digitalization it has been our experience that the average maintenance dose is about 1½ grains daily. Of course some patients may require slightly larger doses,

8. Christian, H. A.: Use of Digitalis Other than in Treatment of Cardiac Decompensation, J. A. M. A. **100**: 789 (March 18) 1933.

9. Harrison, T. R., and Leonard, B. W.: Effect of Digitalis on Cardiac Output of Dogs and Its Bearing on Action of Drug in Heart Disease, J. Clin. Investigation **3**: 1-36 (Oct.) 1926.

10. Burwell, C. S.; Neighbors, deWitt, and Regen, E. M.: J. Clin. Investigation **5**: 125 (Dec.) 1927.

11. Kountz, W. B.: Personal communication to the authors.

12. Starling, E. H.: The Linacre Lecture on the Law of the Heart, given at Cambridge in 1915, London, Longmans, Green & Co., 1918.

13. Cohn, A. E., and Stewart, H. J.: J. Clin. Investigation **1**: 97 (Oct.) 1924, **6**: 53 and 79 (Aug.) 1928. Cohn, A. E., and Steele, J. M., ibid. **11**: 871 (Sept.) 1932. Stewart, H. J., and Cohn, A. E., ibid. **11**: 897 (Sept.) 1932, **11**: 917 (Sept.) 1932.

14. A dose in drops from an ordinary dropper has from two to three times the number of drops as the same amount measured in minims.

while in other instances the maximum effect is maintained by means of considerably smaller doses, even as little as one-half grain (0.03 Gm.) daily.

In summary then, 1½ grains of a properly standardized tablet, capsule or pill of digitalis leaves is equivalent to 15 minims (1 cc), or approximately 45 drops, of a well standardized tincture. In general physicians are finding the tablet, capsule or pill a much more convenient form for administering digitalis than the old fashioned tincture. It is necessary to use between 18 and 30 grains (1 and 2 Gm.) of digitalis to digitalize fully the average adult patient. Except in emergencies

TABLE 1.—*Clinical Course of Patient S. F.*

Date	6/15/33*	7/13/33	8/3/33†	8/17/33	9/21/33	12/14/33
Aver. daily dose, grains	1½	0	1/160	1/240	1/240	1/240
Weight, pounds	118	116	116	115	116½	118
Ventricular rate	80	100	116	70	72	84
Pulse rate	80	92	88	70	72	84
Dyspnea	0	0	+	0	0	0
Edema	0	0	0	0	0	0
Lung (râles)	0	0	+	0	0	0
Liver, cm. palp	0	0	0	0	0	0
Blood pressure	110/70	110/76	88/46	106/70	106/64	120/85
Vital capacity, cc	2,600	2,600	2,150	2,600	2,600	2,600

Date	5/10/34‡	6/21/34§	7/5/34	10/4/34	1/31/35	4/11/35
Aver. daily dose, grain	1/240	1/300	1/600	1/600	1/600	1/600
Weight, pounds	118	121	116	122	122	124
Ventricular rate	66	112	68	80	68	80
Pulse rate	66	100	68	80	68	80
Dyspnea	0	+	0	0	0	0
Edema	0	0	0	0	0	0
Lungs (râles)	0	+	0	0	0	0
Liver, cm. palp	0	0	0	0	0	0
Blood pressure	110/70	104/78	110/70	104/70	116/70	120/80
Vital capacity, cc	2,400	2,000	2,150	2,150	2,100	2,000

Date	7/11/35‖	8/8/35¶	9/5/35#	9/19/35	10/10/35
Aver. daily dose, grain	1/600	.....	1/240	1/240	1/240
Weight, pounds	126	129	130	129	132
Ventricular rate	84	72	112	76	76
Pulse rate	84	72	96	76	76
Dyspnea	0	0	+	0	0
Edema	0	0	0	0	0
Lungs (râles)	0	0	+	0	0
Liver, cm. palp	0	0	0	0	0
Blood pressure	114/80	120/80	120/90	120/70	104/76
Vital capacity, cc	1,900	1,700	1,250	1,500	1,750

* This patient was observed from January to October 1932 while receiving Burroughs, Wellcome and Company digitalis, 1½ grains daily. From October 1932 to June 1933 his condition was controlled by 1½ grains of digalen daily. All medication was stopped on this date.

† Administration of verodigen 1/160 grain daily started on this date.

‡ Condition previously controlled by this dose of verodigen for nine months. All medication stopped on this date.

§ Digitaline (Nativelle) started on this date.

‖ Maintenance dose of 1/600 grain of digitaline (Nativelle) for thirteen months prior to this date.

¶ All medication stopped on this date.

Digoxin 1/240 grain twice daily started on this date.

our usual routine is to give the patient 1½ grains of powdered digitalis four times a day (6 grains daily) for three days. Thus with a total of 18 grains we approach full digitalization with little danger of toxic symptoms. From then on the daily dose is determined by the condition of the patient's circulation or the development of toxic symptoms. The average daily maintenance dose of digitalis is between one-half grain and 3 grains a day.

CHOICE OF PREPARATION

"The proof or disproof of a drug's efficacy rests finally on the test in patients." This statement of Sir Thomas Lewis applies especially to digitalis preparations. A drug of the value and having the widespread use of digitalis deserves the greatest consideration from the practical clinical standpoint. In a given case the therapeutic efficiency may largely depend on a sufficient but nontoxic dose. The present popularity of preparations made from powdered whole digitalis leaves has logically evolved from the stability, accuracy of dosage and satisfactory clinical results of this form of the drug. In addition to whole leaf products, many "purified" preparations containing one or more of the glucosides of digitalis are now available. It is possible that the necessity for bio-assay may be obviated with these preparations, and clinically they should be reliable and efficient. The great variation in their equivalent doses, however, has added confusion to the problem of digitalizing the patient and establishing a maintenance dose.

The clinical comparison of different preparations of digitalis is a difficult procedure. The digitalizing dose and the daily maintenance dose of one preparation may be sufficient to maintain circulatory efficiency in a given patient, while the same dose of another preparation may, while satisfactory, hold the patient continuously closer to toxic manifestations. In other words, "in making such a study it must be remembered that there exists in a majority of patients with established auricular fibrillation a fairly wide margin between the minimum dosage necessary for optimum digitalization and the maximum dosage which can be tolerated without the incidence of toxic effects." [2]

During the past six years we have conducted a clinical study using several preparations of digitalis.[15] The data on fifty-six of a large number of patients observed during this period are satisfactory for analysis. Thirty of the patients had organic heart disease with chronic auricular fibrillation and were taking digitalis when they came under observation. All these patients were observed for two or more years and were ambulatory, and practically all developed rapid ventricular rates with pulse deficit if digitalis was omitted. Seventeen were observed for three or more years and eleven for over four years. Twenty-six patients had never received a preparation of digitalis before coming under observation because of heart failure. All were hospitalized, and the digitalizing dose of a given preparation was determined by clinical trial. Seventeen patients had auricular fibrillation, three had auricular flutter and in six normal sinus rhythm was present.

Our first study was with American Heart Association whole leaf tablets of digitalis as prepared by Gold at Cornell University; the "tabloids" of whole leaf digitalis prepared by Burroughs, Wellcome and Company; and Digalen, a preparation of "purified glucosides" supplied by Hoffman-LaRoche, Inc. Ambulatory patients with established auricular fibrillation, twenty-five in number, were selected from the adult heart clinic of the Pennsylvania Hospital and divided into three groups similar as to age, and degree of circulatory efficiency. The clinical course of the three groups was followed for nine months on the three respective preparations of digitalis. During the subsequent six months, four of the nine members of the group which had previously received the preparation containing only the glucosides were changed to the commercial whole leaf tablet, and the others were given the American Heart Association product; five of the seven patients originally given the commercial whole leaf product were changed to the glucoside preparation, and the remainder were given the A. H. A. product; six members of the group started on the A. H. A. product were then placed on the glucoside tablet, and three were given the commercial whole leaf product. Each patient reported to the cardiac clinic at intervals of from one to four weeks for a check up of symptoms and a physical examination, which included a vital capacity determination. Orthodiagraphic and electrocardiographic studies were made every three or four

15. The following physicians assisted in this study at various stages: Albert W. Bromer, J. Roswell Gallagher, Norman P. Shumway, Donald W. Leik, Noble F. Crandall and Dewitt W. Dominick.

months. During our study of more than eighteen months, no striking difference was observed in the general clinical picture, including the ability to work of the members of the three groups.[16]

The final check up of the original twenty-five patients with whom the study was begun in 1931 is of interest. Twelve patients are still living, and eleven of these are still regular attendants at the cardiac clinic. Of ten patients with marked cardiac enlargement, only three are living. Six of eleven patients with moderate cardiac enlargement are alive, and of four with slight enlargement three are in relatively good health and working.

Our second study was with verodigen—a gitalin glucoside of digitalis. Five patients with established auricular fibrillation and one patient with auricular flutter, all previously untreated with digitalis, were digitalized with this drug, as were two patients with regular sinus rhythm and advanced congestive heart failure. Of the ambulatory patients whose established auricular fibrillation had previously been controlled with whole leaf digitalis preparations or digalen, four-

TABLE 2.—*Clinical Course of W. S., a White Man Aged 38, Who Had Rheumatic Heart Disease with Mitral Stenosis and Auricular Fibrillation*

Date	5/9/35*	5/23/35	7/11/35†	8/1/35	8/29/35	9/12/35
Aver. daily dose, grain	1/1,200	1/1,200	1/600	1/300	1/300	1/300
Weight, pounds	128	131	129	130	132	135
Ventricular rate	84	100	120	84	80	60
Pulse rate	84	100	112	84	80	60
Dyspnea	0	0	0	0	0	0
Edema	0	0	0	0	0	0
Lungs (râles)	0	0	0	0	0	0
Liver, cm. palp.	0	0	0	0	0	0
Blood pressure	120/70	120/70	130/70	110/70	120/60	110/70
Vital capacity, cc.	3,100	3,000	3,300	3,200	3,200	3,100
Complaints	None	None	None	None	Anorexia	Anorexia

* Condition controlled on 1/600 grain of digitaline (Nativelle) for eight months prior to this date. A daily dose of 1/1,200 grain started on this date.

† Daily dose of 1/600 grain resumed on this date.

teen were given verodigen. Clinically we found $\frac{1}{240}$ grain of verodigen to be equivalent to one cat unit (approximately 1½ grains of powdered digitalis), and the total dose necessary for digitalization from $\frac{1}{20}$ to $\frac{1}{12}$ grain administered over five or six days. The most frequent adequate maintenance dose of verodigen was $\frac{1}{240}$ grain daily.[16]

For about one year our study was concerned with digitaline (Nativelle). Twelve patients with heart disease who had previously received no preparation of digitalis were digitalized by this glucoside. Eighteen patients whose established auricular fibrillation had previously been controlled by one or more preparations of digitalis were given digitalin. The average period of observation for this group was ten and one-half months. The total dose necessary for digitalization varied from $\frac{1}{50}$ to $\frac{1}{30}$ grain when administered over five or six days. The most frequent adequate maintenance dose was $\frac{1}{600}$ grain daily.

Our most recent study was made with Digoxin.[17] It was carried out in a similar manner, and twenty-seven patients were observed. Six of them had never previously received digitalis in any form, and the remaining twenty-one had been maintained with one or more other preparations of digitalis. The average period of observation of the latter group was eight and one-half months. The most frequent satisfactory maintenance dose of this product was approximately $\frac{1}{160}$ grain daily, and we feel that this dose is clinically the equivalent of one cat unit of standardized digitalis leaves.

The following case presents an example of the type of ambulatory patient observed. The data recorded are a portion of those obtained during a four and one-half year period of observation while the patient was receiving five different preparations of digitalis. The effect of stopping all medication for a few weeks is well shown. The gradually decreasing vital capacity is of interest. Clinically there was no change in the patient's condition during the study.

S. F., a Jew, aged 32, complained of rapid heart action of three months' duration, with fatigue, dyspnea on exertion and cough, on his first visit to the Cardiac Clinic of the Pennsylvania Hospital, in June 1931. At the age of 15 years he had been told that he had a heart murmur; however, he had been in excellent health and had been very active physically previous to 1931. Physical examination revealed cardiac enlargement, mitral stenosis and insufficiency and auricular fibrillation, without any signs of congestive failure. Since 1931 he had been taking digitalis regularly.

The cardiovascular diagnosis was as follows: A, unknown (tonsillitis); B, cardiac enlargement, mitral stenosis and insufficiency; C, auricular fibrillation; D, class 2a. The clinical course is shown in table 1.

The data in table 2 show the effect of increasing or decreasing the maintenance dose of a digitalis preparation in treating a condition previously well controlled on the same preparation.

COMMENT

The results of a clinical study of this type must be interpreted in the light of the normal variations and the personal element involved. It is essential that a large number of patients be observed over a considerable period of time. (One of us has personally observed all the patients included in this study.) The natural history of disease must be considered, and gradual progression of the pathologic lesion is to be expected in many cases. Complications, especially infectious or embolic, may alter the course of the disease. It is wise to include patients who have never previously received any preparation of digitalis. Patients with established auricular fibrillation and inherently rapid ventricular rates are the most satisfactory when one is judging the digitalizing and the maintenance dose of a given preparation.

There seems to be little relation between the weight of the patient and these doses. For practical purposes the weight need not be considered. The important point is to give the patient a sufficient amount of the preparation, avoiding overdoses. In a given patient this amount can be determined only by clinical trial. It should be remembered that the more severe the heart damage the less the margin of safety in using digitalis preparations. With a bad myocardium, toxic rhythms (premature beats, coupled rhythm and ventricular tachycardia) may appear before nausea and vomiting or other signs of an overdose.

The release of digitalis preparations or other similarly acting drugs before the dosage and efficacy are determined by adequate clinical trial is to be deprecated.

16. Tr. Am. Climat. & Clin. A. **51**: 51 (Oct.) 1935.

17. The manufacturers of verodigen—Merck & Co.—and of digitaline (Nativelle)—E. Fougera & Co., Inc.—claim that their preparations are pure stable crystallized glucosides isolated from the leaves of digitalis purpurea, and the manufacturers of digoxin—Burroughs, Wellcome & Co.—claim that it is the same type of glucoside isolated from the leaves of digitalis lanata. If these claims are true, these three preparations should keep indefinitely and the dose can be determined by weight, without the necessity of animal bio-assay.

The dosage determined by biologic assay may have more or less than the predicted potency when the drug is administered orally to man. Experience with one product in which the strength for man was three times that predicted by the biologic assay [2] has led us to be cautious in evaluating these products on the basis of animal experimentation.

A better result from a given product of digitalis may be due to a relatively greater amount of potent substance rather than to a greater efficacy of the product as compared to some other preparation. This fact probably accounts for much of the improvement seen in patients after they change from one preparation to another.

It has long been known that potent preparations of digitalis produce nausea and vomiting if given in sufficient doses. We have observed these symptoms with all glucoside preparations studied. Other manifestations of toxicity, such as coupling of premature beats, were also noted in all instances. There was no evidence that digitalization was effected more rapidly with any

TABLE 3.—*Doses of Various Preparations*

Name of Preparation	One Cat Unit, Grains	Full Digitalization, Grains
American Heart Association whole leaf tablet	1½	18 - 30
Burroughs, Wellcome & Co. whole leaf tablet	1½	18 - 30
Digalen	1½	18 - 30
Verodigen	1/240	1/20 - 1/12
Digitalin (Nativelle)	1/600	1/50 - 1/30
Digoxin	1/160	1/13 - 1/8

of the glucoside preparations than with digitalis leaves, when given by mouth. After cessation of the drug in a fully digitalized patient, "digitalis effects" seemed to persist for about the same length of time (from three to six weeks) with the various preparations.

All the glucoside preparations tested were uniformly potent and stable. The clinical results were similar and equal to those of standardized digitalis leaves when given in sufficient doses, but they were in no way superior. If these preparations are pure substances, as is claimed, it would seem safe to dispense with biologic assay, which should reduce the cost of manufacture considerably.

It is possible that in the future the chemical isolation and standardization of digitalis glucosides may be the method of choice in producing preparations for clinical use. It seems logical, however, if all the glucosides are potent when given orally to man, that the whole leaf which contains all these substances may be preferable clinically.

SUMMARY AND CONCLUSIONS

The clinical equivalent of approximately 1 cat unit of the preparations studied is listed in table 3. This is the average daily maintenance dose. The second column contains the average full digitalization dose given over a period of from three to six days.

All the preparations were uniformly potent and efficacious and produced similar effects when given orally in equivalent doses.

There was no evidence that the glucoside preparations, when given by mouth, were quicker in action, more efficient, more prolonged in action or less toxic than standardized whole digitalis leaves.

1011 Clinton Street.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

THE COUNCIL WISHES TO EXPRESS ITS APPRECIATION FOR THE VALUE OF ASSISTANCE RENDERED IN THE PREPARATION OF THIS REPORT BY DRS. GEORGE M. COATES, LEE W. DEAN, EDMUND P. FOWLER, AUSTIN A. HAYDEN, ISAAC H. JONES, DOUGLAS MACFARLAN, HORACE NEWHART, BURT R. SHURLY AND WILLIAM P. WHERRY.

HOWARD A. CARTER, Secretary.

PURPOSE OF AUDIOMETERS

A clinical audiometer is an instrument for measuring the acuity and range of hearing.

TENTATIVE MINIMUM REQUIREMENTS FOR ACCEPTABLE AUDIOMETERS

A. *Specifications.*—

1. Audiometers shall produce vibration at frequencies within hearing range (approximately 128 to 8,192 cycles, or higher, per second). They shall be equipped for testing both air and bone conduction.

2. Frequencies: (*a*) Continuous frequencies (sweep) from 128 to 8,192 (or higher, for example, to 16,000) cycles per second.

(*b*) Fixed frequencies from 128 to 8,192 cycles per second. If discrete frequency steps are provided, the tones shall be 128, 256, 512, 1,024, 2,048, 4,096, 8,192 cycles per second. Numerical annotations to be used designate pitch.

(*c*) The limits of tolerable frequency variation shall be not more than ± 5 per cent at all frequencies. Dials shall be marked so that frequencies may be identified readily.

3. Attenuation: Audiometers shall be calibrated in decibels, with 5 decibels per step or less. In no case should more than 5 decibel steps integrals be used. Toleration limits to be within ± 1½ decibel per 5 decibels steps and ± 5 decibels cumulative at any portion of the intensity range. Dials shall be easily read. The term "percentage hearing" shall not be used, but hearing losses shall be reported in decibels units loss.

4. Range of Intensity: The intensity range of the test tones above the normal threshold shall be at least that as follows:

Test Tone Cycles per Second	Intensity Range Decibels
128	60
256	80
512	85
1,024	90
2,048	90
4,096	90
8,192	80

5. Wave Form: The purity of the tone in the air conduction receiver shall be such that the harmonics at any particular frequency shall be at a level not less than 40 dbs. below the fundamental tone or that other accessory noises (such as the line hum, click of interrupting switches, etc.) shall in anyway interfere with the test tone.

6. For a bone conduction receiver, the sensation level of the sound reaching the tympanum through the auditory meatus shall be at least 5 decibels below the level generated by bone conduction at all test frequencies as judged by a normal ear, when the bone conduction receiver is placed on the mastoid region.

7. Power Supply: Either alternating or direct current, alternating-direct current or battery.

8. Ruggedness of construction to stand reasonable usage. Use of readily obtainable and replaceable parts.

9. Uniformity in calibration in decibels.

10. Advisability of the selection of a central, disinterested agency for reporting on physical characteristics of various audiometers.

11. Advisability of manufacturers assuring servicing.

B. *Audiogram or Auditory Chart.*—

(To be adopted later when a more definite consensus of opinion develops.)

C. *Definition of Threshold of Hearing.*—The threshold of hearing is the audiometer setting corresponding to the lowest

intensity at which the person being tested is able to indicate correctly more than half the time that he is hearing.

D. *Marketing and Advertising.*—Rules of the Council on Physical Therapy shall be adhered to by manufacturers of acceptable audiometers.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

PANTOPON "ROCHE": II

PANTOPON "ROCHE" WAS ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR INCLUSION IN NEW AND NONOFFICIAL REMEDIES IN 1915 AS PRODUCING ESSENTIALLY "THE EFFECTS OF OPIUM, BUT BEING DEVOID OF ITS EXTRACTIVES, IT MAY BE USED HYPODERMICALLY." IN 1931 IT WAS OMITTED FROM NEW AND NONOFFICIAL REMEDIES BECAUSE OF EXTRAVAGANT AND UNWARRANTED ADVERTISING CLAIMS OF THE DISTRIBUTOR. SINCE THAT TIME THE COUNCIL'S ATTENTION HAS BEEN CALLED TO PROMOTIONAL MATERIAL ISSUED BY HOFFMANN LA-ROCHE, INC., WHICH APPEARED TO REPEAT THE OBJECTIONABLE CLAIMS. THE COUNCIL RECENTLY CONSIDERED SUCH A CIRCULAR AND POINTED OUT TO THE FIRM ERRONEOUS STATEMENTS CONCERNING THE COMPARATIVE CONTENT OF PANTOPON IN RELATION TO MORPHINE SULFATE. THE FIRM, AFTER RECEIVING A STATEMENT OF THE COUNCIL'S CONSIDERATION, REPLIED THAT THE ERRONEOUS STATEMENTS WERE MISTAKES WHICH WOULD NOT OCCUR AGAIN AND ASKED THAT THE REPORT OF THE COUNCIL'S CONSIDERATION BE WITHHELD FROM PUBLICATION. THE FIRM INTIMATED THAT IT WOULD RESUBMIT THE PRODUCT FOR RECONSIDERATION. IN THE MEANTIME THERE CAME TO THE REFEREE'S ATTENTION A STUDY BY DRS. J. M. HAYMAN JR. AND HERBERT FOX, WHICH CONFIRMS THE COUNCIL'S CONTENTIONS CONCERNING PANTOPON. THE COUNCIL CONSIDERED THIS REPORT AND AUTHORIZES PUBLICATION.

THE COUNCIL WISHES AT THIS TIME TO EXPRESS ITS APPRECIATION TO DRS. HAYMAN AND FOX FOR MAKING THE FOLLOWING REPORT AVAILABLE.

PAUL NICHOLAS LEECH, Secretary.

COMPARISON OF THE ANALGESIC ACTION OF PANTOPON AND MORPHINE SULFATE

J. M. HAYMAN JR., M.D
AND
HERBERT FOX, M.D.
CLEVELAND

Asserting that the action of opium possesses certain advantages over that of morphine, Professor Sahli induced Dr. Schärges of the Hoffmann-La Roche Laboratories to prepare a mixture of the hydrochlorides of all the alkaloids of opium, in the proportions occurring naturally, in a form suitable for hypodermic injection. This preparation was called Pantopon, and Sahli [1] in 1909 reported its satisfactory use but without giving any details of its supposed superiority over morphine. Since this paper many references to Pantopon have appeared in the literature, but there is no agreement regarding the cause of its reputed superiority over morphine. It is said to produce less nausea and vomiting and to give less respiratory depression,[2] presumably owing chiefly to the narcotin present. It is advocated for the relief of renal colic [3] because of the relaxation of ureteral tonus produced by the papaverine present. Macht and his associates, in a study of cutaneous pain, reported that Pantopon had a greater analgesic effect than an equivalent dose of morphine,[4] while Winternitz [5] concluded that the residual alkaloids contributed little to the analgesic action of opium. Barlow,[6] in a study of the tranquilizing potency of morphine and other opium alkaloids for rats, obtained no evidence "that would indicate any significant activity on the part of the residual opium alkaloids contained in Pantopon." Eggleston and Hatcher [7] found that in dogs Pantopon was actually slightly more emetic than could be accounted for by the morphine content.

The usual dose of Pantopon, one-third grain (0.0216 Gm.), costs the hospital twice as much as morphine sulfate, one-fourth grain (0.0162 Gm.). Since Pantopon is said to contain 50 per cent of morphine hydrochloride,[8] it might be expected that as far as its morphine content is concerned the effect of one-third grain of Pantopon would be equivalent to one-sixth grain (0.0108 Gm.) of morphine sulfate. But one-third grain of Pantopon contains one-sixth grain of anhydrous morphine hydrochloride, while U. S. P. morphine sulfate contains five molecules of water of crystallization. Therefore, on a basis of morphine alkaloid there is only about one twenty-fifth grain (0.0026 Gm.) less morphine in one-third grain (0.0216 Gm.) of Pantopon than in one-fourth grain (0.016 Gm.) of morphine sulfate.

We have attempted to determine whether any differences could be detected in the analgesic effects of Pantopon and morphine, either beneficial or deleterious, when these were given as objectively as possible. The plan of the experiment was to administer the drugs in varying order to patients requiring morphine, in such a manner that neither the patient nor the observer would know which drug had been given. Information was sought on two questions: (1) whether the method could detect differences in the effect of dosages of one-sixth grain (0.0108 Gm.) and one-fourth grain (0.0162 Gm.) of morphine sulfate, and (2) whether the effect of Pantopon differed from either dosage more than the two dosages of morphine sulfate differed between themselves. Since Pantopon tablets are brownish biconvex disks, while morphine sulfate tablets are white and flat, Prof. E. D. Davy of the School of Pharmacy of Western Reserve University was kind enough to color tablets of morphine sulfate for us and to run Pantopon through the same tablet machine so that they were of the same shape. The tablets as used were indistinguishable in appearance. Only one of the several nurses who administered them thought she could distinguish the Pantopon by its less ready solubility. All doses were ordered by number and given hypodermically. The results were recorded on special forms by the nurse or the house officer. The drug was considered to have given complete relief if the patient was relieved of pain or asleep in half an hour, moderate relief if effective in from one-half to one hour, and no relief if the patient was still complaining or uncomfortable at the end of one hour. The effectiveness of morphine sulfate one-sixth grain (0.0108 Gm.), morphine sulfate one-fourth grain (0.0162 Gm.) and Pantopon one-third grain (0.0216 Gm.) was compared for the relief of postoperative pain and discomfort; the pain of renal colic, pleurisy, peritonitis, facial herpes and other conditions; and for the restlessness of cardiac dyspnea and other conditions. The distribution of doses is given in the accompanying table.

It will be noted that the analgesic efficiency of one-third grain of Pantopon is practically the same as that of one-fourth grain of morphine sulfate, or, in other words, that it is not materially greater than that of its

1. Sahli, Hermann: Therap. Monatschr. **23**: 1 (Jan.) 1909.
2. Macht, D. I.: J. Pharmacol. & Exper. Therap. **7**: 339 (Oct.) 1915.
3. Macht, D. I.: J. Pharmacol. & Exper. Therap. **9**: 197 (Dec.) 1916.
4. Macht, D. I.; Herman, N. B., and Levy, C. S.: J. Pharmacol. & Exper. Therap. **8**: 1 (Jan.) 1916.
5. Winternitz, H.: München med. Wchnschr. **59**: 853, 1912.
6. Barlow, O. W.: The Tranquilizing Potency of Morphine, Pantopon, Codeine, Papaverine and Narcotine, J. A. M. A. **99**: 986 (Sept. 17) 1932.
7. Eggleston, Cary, and Hatcher, R. A.: J. Pharmacol. & Exper. Therap. **7**: 225 (Oct.) 1915.
8. New and Nonofficial Remedies 1930, Chicago, American Medical Association.

morphine content. Nausea, or nausea and vomiting, which had not been present before the use of any narcotic, occurred in one patient after one-sixth grain of morphine sulfate and in three patients after Pantopon. There was no apparent difference in the degree of respiratory depression with the three preparations. Detailed study of pulse and blood pressure changes were not made.

A striking point in the whole study was the variability of relief afforded the same patient at different times

Distribution of Doses

	Morphine Sulfate 1/6 Grain	Morphine Sulfate 1/4 Grain	Pantopon 1/3 Grain
Postoperative	53	44	48
Pain	19	28	22
Restlessness	11	5	14

Degree of relief, according to the criteria used:

	Doses	Relief: Complete	Moderate	None
Morph. sulf. 1/6 grain	83	38 (45.7%)	36	9
Morph. sulf. 1/4 grain	77	46 (59.7%)	26	5
Pantopon 1/3 grain	84	50 (59.5%)	29	5

by the same drug as well as by the different drugs at different times. This has impressed us with the fact that the factors contributing to the condition of a patient are so complex and so variable from time to time that assay of the relative merits of two drugs is extremely uncertain unless the one shows a consistent superiority under all conditions of administration.

CONCLUSION

Blind tests confirmed that morphine sulfate one-fourth grain is more likely to give relief from pain than morphine sulfate one-sixth grain and apparently not materially more likely to produce nausea. No indications have been obtained that Pantopon one-third grain possesses any advantages over morphine sulfate one-fourth grain.

Council on Foods

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

FRANKLIN C. BING, Secretary.

Vitamin D Milk Produced by Feeding Cows Irradiated Yeast

In 1929 Wachtel[1] reported that the feeding of irradiated dried yeast to cows resulted in the secretion of vitamin D in the milk. This report was confirmed and amplified by the observations of Hart and Steenbock and their associates[2] at the University of Wisconsin. Later work has revealed the factors concerned in the feeding of irradiated dried yeast in order that a milk of uniform vitamin D potency might be produced. The yeast must be fed two or more times daily rather than all at one feeding. The amounts to be fed depend on the amount of milk secreted. High producing cows are more efficient than low producing cows in transferring vitamin D from the food to the milk. Since 1932 this type of vitamin D milk has been made commercially available. The product is sometimes referred to as "metabolized" vitamin D milk. This name is one of convenience only and it is not entirely satisfactory because neither the milk nor the vitamin D has been subjected to any metabolizing process. The vitamin D appears to be imparted unchanged to the milk. The yeast feeding method is used on both "certified" and ordinary dairy farms. The expression "certified vitamin D milk" refers to metabolized vitamin D milk of certified grade, produced according to the Methods and Standards of the American Association of Medical Milk Commissions, Incorporated.

Numerous investigators have reported on the clinical effectiveness of metabolized vitamin D milk. Kramer,[3] Wyman,[4] Gerstenberger[5] and Eliot[6] and their respective co-workers showed that, if there is any difference, unit for unit, between different types of vitamin D milk, the difference is too small to be of practical significance.

Metabolized vitamin D milk is produced under the joint sponsorship of Standard Brands Incorporated and the Wisconsin Alumni Research Foundation. The irradiated dried yeast intended for use in the feeding of cows may be sold by Standard Brands Incorporated only to dairymen licensed by the Wisconsin Alumni Research Foundation. The approved feeding schedule is made a part of the license agreement and before a license is issued the dairyman must present a statement from his local health department, medical milk commission or other official milk control body to the effect that he is responsible, in good standing and qualified to produce the milk under proper conditions. The vitamin D content of the milk produced, as shown by repeated bio-assays, is not less than 400 units of vitamin D per quart. The Council voted to accept pasteurized metabolized vitamin D milk and to grant the use of the seal of acceptance to licensed dairies that conform to the Rules and Decisions of the Council. The requirements and allowable claims for metabolized vitamin D milk are the same as for other types of vitamin D milk containing 400 U. S. P. units of vitamin D per quart.[7]

MINERAL OIL IN FOODS

It is well known that liquid petrolatum is not absorbed from the gastro-intestinal tract[1] and, while it possesses many of the physical properties of edible oils, it yields no calories. Because of these properties, mineral oil is extensively used in the treatment of constipation and, to a lesser extent, in replacing fat in certain foods, chiefly mayonnaise and salad dressings, and a few other products. These special food preparations are useful in diets in which restriction of calories or of fats is required, as in the selection of foods for reducing weight; but their indiscriminate use is undesirable.

It was reported by Burrows and Farr[2] and by Dutcher and his collaborators[3] in 1927 that mineral oil interferes with the utilization of vitamin A by experimental animals. This observation has been verified and clarified by additional reports which have since appeared in the scientific literature.[4] Jackson found that the ingestion of mineral oil resulted in a considerable loss of vitamin A to the animal organism if the oil was administered with the source of vitamin A but not if the mineral oil were given at some other time of the day. Later reports brought out the interesting fact that different results could be expected with different sources of vitamin A. Mineral oil has a marked effect on the absorption of carotenes but has little effect on the absorption of vitamin A itself. The carotenes are provitamin A found

1. Wachtel, N.: München. med. Wchnschr. **76:** 1513 (Sept. 6) 1929.
2. Hart, E. B.; Steenbock, Harry; Kline, O. L., and Humphrey, G. C.: J. Biol. Chem. **86:** 145 (March) 1930. Steenbock, Harry; Hart, E. B.; Hanning, Flora, and Humphrey, G. C.: J. Biol. Chem. **88:** 197 (Aug.) 1930.
3. Kramer, Benjamin, and Gittleman, I. F.: New England J. Med. **209:** 906 (Nov. 2) 1933.
4. Wyman, E. T.; Eley, R. C.; Bunker, J. W. M., and Harris, R. S.: New England J. Med. **212:** 257 (Feb. 7) 1935.
5. Gerstenberger, H. J.; Horesh, A. J.; Van Horn, A. L.; Krauss, W. E., and Bethke, R. M.: Antirachitic Cow's Milk, J. A. M. A. **104:** 816 (March 9) 1935.
6. Eliot, Martha M.; Nelson, E. M.; Barnes, D. J.; Browne, Florence A., and Henss, Rachel M.: J. Pediat. **9:** 355 (Sept.) 1936.
7. The Present Status of Vitamin D Milk, Report of the Council on Foods, J. A. M. A. **108:** 206 (Jan. 16) 1937.
1. Mineral oil can be absorbed to a slight extent, as shown by Channon, H. J., and Collinson, G. A.: The Unsaponifiable Fraction of Liver Oils: V. The Absorption of Liquid Paraffin from the Alimentary Tract in the Rat and the Pig, Biochem. J. **23:** 676-688 (No. 4) 1929.
2. Burrows, M. T., and Farr, Wanda K.: The Action of Mineral Oil per Os on the Organism, Proc. Soc. Exper. Biol. & Med. **24:** 719 (April) 1927.
3. Dutcher, R. A.; Ely, J. O., and Honeywell, H. E.: Vitamin Studies: XV. Assimilation of Vitamins A and D in Presence of Mineral Oil, Proc. Soc. Exper. Biol. & Med. **24:** 953 (June) 1927.
4. Rowntree, Jennie I.: The Effect of the Use of Mineral Oil upon the Absorption of Vitamin A, J. Nutrition **3:** 345 (Jan.) 1931. Jackson, R. W.: The Effect of Mineral Oil Administration upon the Nutritional Economy of Fat Soluble Vitamins: II. Studies with the Vitamin A Factor of Yellow Corn, ibid. **4:** 171 (July) 1931. Mitchell, Helen S.: Influence of Mineral Oil on Assimilation of Vitamin A from Spinach, Proc. Soc. Exper. Biol. & Med. **31:** 231 (Nov.) 1933. Jackson, R. W.: The Effect of Mineral Oil Administration upon the Nutritional Economy of Fat-Soluble Vitamins: I. Studies with the Vitamin A of Butter Fat, J. Nutrition **7:** 607-617 (June) 1934.

in plant tissues and they are hydrocarbons, while vitamin A, which is derived from animal sources, is a complex alcohol. Dutcher [5] has suggested that the hydrocarbons of the unassimilated mineral oil in the intestine possess a greater solvent effect on the carotenes than on vitamin A.

It is apparent that liquid petrolatum would be a poor vehicle for vitamin A and particularly for provitamin A, and its use in this connection could not be countenanced. On the other hand, it appears that in the amounts usually prescribed (15 cc. from one to three times daily for adults) and under the conditions which should be observed (not to be taken at mealtime), the effect of liquid petrolatum on the absorption of vitamin A of the human diet probably is of little consequence. When incorporated in foods, however, so that the mineral oil is taken at mealtime, it is obvious that there is danger of interference with the absorption of the fat soluble vitamins. Further, the indiscriminate use of foods containing mineral oil by persons who have loose bowels might cause further looseness and thus interfere with the utilization of other vitamins and minerals.

The Council therefore advises strongly against any indiscriminate dosage of mineral oil either alone or incorporated in special foods. Those food products containing mineral oil will be considered for acceptance as special items with limited usefulness to be taken under the direction of a physician.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

MEYENBERG EVAPORATED GOAT MILK

Manufacturer.—Meyenberg Milk Products Company, Salinas, Calif.

Description.—Canned evaporated goat milk.

Manufacture.—Fresh goat milk is inspected, weighed, sampled, filtered, standardized to the desired ratio of fat to solids, evaporated in vacuo at 49 C., homogenized at 2,500 pounds pressure, cooled to 10 C., standardized for total solids, and mechanically filled into cans which are sealed and processed according to the procedure usual for evaporated cow's milk. The equipment used during the entire process is made from stainless steel and glass. Milk is produced in accordance with the regulations of the state of California.

Analysis (submitted by manufacturer).—Moisture 75.7%, total solids 24.3%, ash 1.6%, fat (ether extract) 7.2%, protein (N × 6.38) 8.0%, sucrose none, lactose 8.4%.

Calories.—1.3 per gram; 37 per ounce.

WATKINS BRAND FREE RUNNING TABLE SALT, IODIZED

Manufacturer.—The Watkins Salt Company, Watkins Glen, N. Y.

Description.—Granulated table salt containing magnesium carbonate (1 per cent) as a caking inhibitor and potassium iodide (0.02 per cent).

Manufacture.—Brine, obtained by returning water pumped into the salt veins by drilled wells, is treated with milk of lime, preheated and stored to permit the settling of insoluble matter. The solution is filtered and evaporated. The resulting salt is washed in brine, dried and screened for size. Definite amounts of potassium iodide and magnesium carbonate are added and the salt automatically is packed in cartons.

Analysis (submitted by manufacturer).—Moisture 0.1%, total solids 99.9%, sodium chloride (NaCl) 98.5%, magnesium carbonate ($MgCO_3$) 1.0%, calcium sulfate ($CaSO_4$) 0.34%, calcium chloride ($CaCl_2$) 0.04%, potassium iodide (KI) 0.02%, iron and aluminum oxides nil, calcium carbonate ($CaCO_3$) nil, magnesium sulfate nil, magnesium chloride nil.

5. Dutcher, R. A.; Harris, P. L.; Hartzler, Eva R., and Guerrent, N. B.: Vitamin Studies: XIX. The Assimilation of Carotene and Vitamin A in the Presence of Mineral Oil, J. Nutrition **8**: 269 (Sept.) 1934.

VALORA BRAND LEMON JUICE 100% PURE

Manufacturer.—Santa Barbara Citrus Juice Company, Inc., Orange, Calif.

Description.—Canned, pasteurized California lemon juice practically equivalent to fresh lemon juice in vitamin C content.

Manufacture.—Selected tree-ripened fruit is washed, inspected, automatically cut in halves and reamed by hand. The juice is strained, deaerated, vacuum filled into cans, vacuum sealed, pasteurized and immediately cooled.

Analysis (submitted by manufacturer).—Moisture 90.5%, total solids 9.5%, ash 0.34%, fat (ether extract) 0.1%, protein (N × 6.25) 0.5%, reducing sugars (as invert) 1.9%, sucrose 0.14%, crude fiber 0.03%, carbohydrates other than crude fiber (by difference) 2.6%, titratable acidity as citric acid 5.95%, p_H 2.37, vitamin C (titration) 44 mg. per 100 cc. (900 International units).

Calories.—0.1 per gram; 3 per ounce.

Vitamins.—A rich source of vitamin C.

SEXTON BRAND FRUIT FOR SALAD, WATER PACKED

Manufacturer.—John Sexton & Company, Chicago.

Description.—Canned apricots, pears, peaches, pineapple and cherries, packed in water.

Manufacture.—Apricots fully tree ripened are inspected, washed, graded, cut, pits removed, again sorted and graded for ripeness. Bartlett pears are graded, ripened, peeled, cut, stemmed, cored, inspected, immersed in brine solution and washed. Yellow cling peaches fully tree ripened are mechanically cut, pitted, lye peeled, washed, inspected, graded for size and washed. Fancy sliced pineapple packed in juice and Maraschino cherries without added sugar are purchased. Fruit is assembled, washed and filled into cans in proper proportions, which are inspected, filled with water, exhausted, sealed and processed.

Analysis (submitted by manufacturer).—(Analysis of entire contents including liquid): moisture 90.3%, total solids 9.7%, ash 0.22%, fat (ether extract) 1.0%, protein (N × 6.25) 0.4%, crude fiber 0.34%, carbohydrates other than crude fiber (by difference) 7.8%.

Calories.—0.41 per gram; 12 per ounce.

Claims of Manufacturer.—For diets in which sweetened fruit is proscribed.

LIBBY'S HAWAIIAN PINEAPPLE

FANCY GRADE (1) SLICES; (2) TIDBITS; (3) LONG SLICES; (4) DE LUXE STYLE; (5) CRUSHED

Manufacturer.—Libby, McNeill & Libby, Honolulu, Hawaii.

Description.—Canned Hawaiian pineapple, cut in various styles, packed in syrup. (1) Slices cut crosswise of the pineapple; (2) machine cut tidbits; (3) slices cut lengthwise of the pineapple; (4) large, irregular machine cut tidbits; (5) broken slices and fruit from the inside of the shell, crushed.

Manufacture.—Mature Hawaiian pineapples are mechanically peeled, cored and trimmed. The cylinders of fruit are hand trimmed, machine cut, graded and filled into cans, which are subjected to vacuum pressure, filled with syrup, sealed and processed.

Analysis (submitted by manufacturer).—Moisture 74.1% to 75.2%, total solids 24.8% to 25.9%, ash 0.3% to 0.4%, fat (ether extract) 0.09% to 0.1%, protein (N × 6.25) 1.0%, reducing sugar as invert sugar 9.9% to 13.0%, sucrose 7.7% to 9.6%, crude fiber 0.07% to 0.09%, carbohydrates other than crude fiber (by difference) 23.3% to 24.3%, iron (Fe) 0.56 to 1.06 mg. per hundred grams, and copper (Cu) 0.15 to 0.24 mg. per hundred grams.

Calories.—0.9 per gram; 25 per ounce.

Vitamins.—The results of biologic assay, submitted by the manufacturer, indicate the following vitamin content: International units per hundred grams: vitamin A, 44; vitamin B_1, 12; vitamin C, sliced pineapple and tidbits 210 to 245, crushed pineapple 140 to 175. Sherman-Bourquin units of vitamin G per hundred grams, 10.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, NOVEMBER 27, 1937

PRINCIPLES AND PROPOSALS OF THE COMMITTEE OF PHYSICIANS

The Board of Trustees has especially authorized publication of the following statement:

Following the publication of the report of the American Foundation Studies in Government, a small group of physicians, assembled in New York, developed certain principles and proposals which have since been circulated by a self-appointed Committee of Physicians among the medical profession of the United States, with a view to obtaining signatures in their support. During a period of approximately six months, some 430 medical men have apparently permitted the use of their names. Early in November the self-appointed group of physicians released to the press for Sunday, November 7, a statement of principles and proposals to which the names of the 430 signers were affixed. The newspapers generally heralded this action as a revolt against the American Medical Association, in a great majority of the cases indicating that there was a revolt in behalf of "state medicine." The publication of this manifesto and the attached signatures has been heralded with glee by many of those who have been opposing the American Medical Association in behalf of cooperative practice, sickness insurance, and various fundamental changes in the nature of the practice of medicine. Within the last week another series of proposals has come from another self-appointed group requesting signatures of physicians. This series of proposals includes the suggestion for enabling legislation for sickness insurance.

The American Medical Association is an organization of physicians along strictly democratic lines. Representatives of county medical societies send delegates to state medical societies and these, in turn, send their delegates to the House of Delegates of the American Medical Association. It is possible for any physician, through his delegate, to obtain consideration of any proposal which he may wish to bring to the attention of the House of Delegates. At the Atlantic City session the delegates from New York State presented these principles and proposals, slightly modified, as an action of the House of Delegates of the Medical Society of the State of New York. They were carried before a reference committee and, in several sessions of that reference committee, considerable numbers of physicians presented arguments for and against their adoption. The House of Delegates, however, after thorough consideration of the report of the reference committee, and with full cognizance of the method of development of these principles and proposals, and of the considerations which were involved in their passage by the House of Delegates of the Medical Society of the State of New York, did not accept them. The House of Delegates did, however, point out the willingness of the medical profession to do its utmost today, as in the past, to provide adequate medical service for all those unable to pay either in whole or in part.

Why, then, any necessity for the circulation of petitions presenting proposals for fundamental changes in the nature of development, distribution and payment for medical service? Is there a well designed plan to impress the executive and legislative branches of our government with the view that the American medical profession is disorganized, distrustful of its leaders, undemocratic in its action and opposed to the best interests of the people? Who may profit from such evidence of disorganization? Is there any evidence that the self-appointed Committee of Physicians and the 430 physicians who have affixed their names to these principles and proposals are any better able to represent the opinion of the American medical profession than the democratically chosen House of Delegates of the American Medical Association—one of the most truly representative bodies existing in any type of organized activity in this country today?

The House of Delegates has given its mandate to the Board of Trustees, to the officers and to the employees of the Association. That mandate opposes the principles and proposals emanating from the Committee of Physicians, and equally the new proposals. If the House of Delegates sees fit to depart from the principles now established, it will be the duty of the Board of Trustees, the officers and the employees of the American Medical Association to promote such new principles as the House of Delegates may establish. Until, however, the regularly chosen representatives of the 106,000 physicians who constitute the membership of the American Medical Association (now the largest membership in its history) determine, after due consideration, that some fundamental change or revolution in the nature of development, distribution and payment for medical service in the United States is necessary, physicians will do well to abide by the principles which the House of Delegates has established. They will at the same time deprecate any attempts inclined to lead the executive and legislative branches of our government, as well as the people of the United States, into the belief that the American medical profession is disorganized.

Members of the medical profession, locally and in the various states, are ready and willing to consider, with other agencies, ways and means of meeting the problems of providing medical service and diagnostic laboratory facilities for all requiring such services and not able to meet the full cost thereof. The American Medical Association has reaffirmed its willingness on receipt of direct request to cooperate with any governmental or other qualified agency and to make available the information, observations and results of investigation, together with any facilities of the Association. Thus far, no call has come from any governmental or other qualified agency, for the cooperation of the American Medical Association in studying the need of all or of any groups of the people for medical service, to determine to what extent any considerable proportion of our public are actually suffering from lack of medical care. The offer still stands as evidence of the willingness of the American Medical Association to aid in finding a solution to any or all of the problems in the field of medical care that now prevail.

PREVENTION AND TREATMENT OF MEASLES

The use of convalescent or adult serum in the prevention of measles has been known so long that recent reports serve largely to corroborate previous investigations. Fleming [1] has recently reported an epidemic of measles in a school of 300 boys, in which treatment by adult serum was employed. The term started on January 15, and on January 17 a boy was admitted to the school sanatorium with measles; by February 14 serum was given to all who were susceptible. In the end, seventy of the eighty-five patients with measles were treated with serum. They fell into three groups: 1. To fifteen patients serum was not given; they included the original case and one boy who was reported to have had measles as a child. The average period of fever for this group was 8.2 days. Complications included one severe case of bronchopneumonia and two cases of middle ear infection. 2. Twenty patients were given serum during incubation. These had an average fever period of 6.5 days. There were four cases of middle ear inflammation. 3. Finally there were fifty patients to whom serum was given before infection. In these patients the average fever period was 5.2 days and there were no complications. Fleming concluded therefore that the adult serum had a definite effect in attenuating the disease and in decreasing the incidence of complications but that there was no evidence in this epidemic of any true temporary immunity resulting from the use of the serum.

Hardgrove and his co-workers [2] recently reported complete protection for 82 per cent of measles contacts receiving convalescent serum and for 64 per cent of those receiving less than the recommended amount. The serum also appears to have some therapeutic value. The serum is weakened somewhat after one year but retains enough potency to be of use when given in large amounts. Furthermore, they believed that pooled normal serum can be used for the same purpose as convalescent measles serum if large doses are administered. These studies seem to confirm the general impression that convalescent serum is of value in the attenuation of measles. It seems likely that normal adult serum is not as powerful as convalescent serum in this respect, and if Fleming had been able to use the convalescent serum or larger quantities of the adult serum he might have had complete suppression of the measles rather than attenuation. Dosages, however, still have to be standardized and probably depend on several factors, including the source of the serum.

In recent years the use of placental extract in the prevention and modification of measles has also received considerable attention, owing partially at least to the expense and difficulty of obtaining satisfactory convalescent or even normal serum. Thus McKhann and Chu [3] reported a series of observations which indicated that placental protein extracts can be prepared and, when given by intramuscular injections to susceptible patients early in the period of incubation, result either in protection or in attenuation. In a more recent paper McKhann [4] states that the dosage of placental extract necessary is influenced by several factors, including potency, time of administration, age and size of the patient and degree of exposure. In some instances, intramuscular administration is followed by local or general reactions, but such reactions are severe only relatively rarely. Sensitizations to subsequent injections of placental extract have not been found. The immunity following the placental extract is passive in type and of short duration. Thus observations of fifty-four children reexposed to measles within a few weeks after receiving placental extract indicate that the immunity resulting from the injection is insufficient to protect against reexposure occurring more than two weeks after administration.

Montgomery,[5] using immune globulin of placental origin, attempted to prevent or modify measles in children who were patients in a cross-infected ward. Suggestive but undiagnosable mild attacks of fever occurred after the original contact, but thirty-three days after the original case a child developed a typical attack of measles, although it had received the immune globulin. These observations would seem to indicate that passive immunity resulting from 10 cc. doses of

1. Fleming, Sir K. L.: The Use of Adult Serum in Measles, Brit. M. J. **2**: 612 (Sept. 25) 1937.
2. Hardgrove, Maurice; Schwartz, A. B., and King, Louise F.: Measles: The Use of Convalescent Serum in the Prevention, Modification and Treatment, Wisconsin M. J. **36**: 817 (Oct.) 1937.
3. McKhann, C. F., and Chu, F. T.: Use of Placental Extract in Prevention and Modification of Measles, Am. J. Dis. Child. **45**: 475 (March) 1933.
4. McKhann, C. F.: Immunologic Application of Placental Extract, New England J. Med. **216**: 450 (March 18) 1937.
5. Montgomery, Alice K.: Immune Globulin (Human) Lederle in the Prevention of Measles, Glasgow M. J. **10**: 89 (Sept.) 1937.

immune globulin is of fairly short duration. This view is similar to that held by McKhann and others. The possibilities resulting from the apparent certainty that both immune serum and placental extract can produce definite although temporary immunity to measles is significant and encouraging in view of the knowledge that measles is much more serious than is generally recognized. Certainly these facts open new possibilities for the identification of a chemical principle of high immunizing power.

CALCIUM AND BLOOD COAGULATION

The enormous literature on the phenomenon of the clotting of blood attests vigorous investigative activity. William Hewson [1] wrote in 1770 of his observation that coagulation could be influenced by salts of various kinds. During the middle years of the nineteenth century active investigation resulted in the discovery that serum contained an organic substance, which could also be extracted from blood clots, that had the power of initiating the coagulation of blood and of various ordinarily incoagulable body fluids. Alexander Schmidt showed in 1872 that inorganic salts had an essential part in the process of clotting. The view that calcium assumes a peculiar rôle in blood coagulation appears to have arisen with Hammarsten, who vigorously championed the specific nature of its action. Most workers accept the requirement of calcium as constituting a link in the chain of events ending in the formation of the fibrin clot but at present there is a question regarding the point at which this element exerts its influence.

The essential features of the various modern theories of coagulation include a protein called prothrombin as a normal constituent of the blood. This is changed to thrombin directly or indirectly by a substance (kinase) contained in tissue fluids and platelets, when calcium is present. The resulting thrombin brings about a change of the fibrinogen, ordinarily present in blood, to fibrin, which is the basis of the clot. The point at which calcium acts is in the change of prothrombin to thrombin. Whether it acts merely as a catalyst or actually becomes part of the thrombin, essential for its action, has been the subject of much controversy. Ferguson [2] has introduced a new factor into the general conception. Using carefully prepared prothrombin and cephalin (kinase) with calcium chloride, he produced thrombin the activity of which was tested on solutions of purified fibrinogen. To test for the presence of calcium in the thrombin, the latter was subjected to decalcification by oxalate or citrate or by dialysis before it was permitted to act on the fibrinogen. Thrombin can lose calcium to the extent of failure to clot the fibrinogen solution if the decalcification is carried out soon after the formation of the thrombin. If the thrombin is allowed to "age" for several hours before decalcification is attempted, the loss of the calcium no longer prevents clotting. Thus there seems to be a "calcium-containing intermediate complex" which changes to stable thrombin.

An important deduction of the foregoing observations is that the action of the decalcifying anticoagulants is rather more complex than ordinarily conceived: they may prevent clotting by actually precipitating ionized calcium before thrombin has been formed or they may compete with thrombin for the calcium and, if the thrombin-calcium complex is newly formed, will interfere with coagulation by withdrawing the calcium from the complex. These studies have added new details to a commonplace but highly intricate and important vital phenomenon; from such effort with experimental models may come significant improvements in the technic of transfusion.

1. Hewson, William: The Works of William Hewson, F.R.S., Sydenham Society, 1846, pp. 1-90.
2. Ferguson, J. H.: Am. J. Physiol. **119**: 755 (Aug.) 1937.

Current Comment

THE FOURTH OF JULY RECORD

On page 1806 of this issue of THE JOURNAL appears a brief summary of 1937 Fourth of July fireworks injuries. This continues, after a lapse of twenty-one years, those summaries which the American Medical Association published from 1903 to 1916 inclusive. Their renewal is necessitated by the unfortunate increase that has since occurred. Fireworks are again a serious menace to life and health. Their control must originate in the respective state legislatures; to be adequate, laws must be enacted by contiguous states. This matter should receive the immediate attention of lawmakers in the attempt to avoid or minimize totally unnecessary deaths and injuries on Independence Day, 1938.

RABIES IN ALABAMA

In Alabama, according to a recent report,[1] it has been impossible to institute or enforce effective measures for controlling rabies in dogs. As a result, the manufacture and distribution of antirabies vaccine has become an expensive and tedious problem of public health administration. From January 1922 to August 1936, 9,282 animals received a positive laboratory diagnosis of rabies. During this period 34,864 individuals were given the antirabies vaccine and forty-two persons died of the disease. There has been a sixfold increase in the incidence of the disease among animals during this period; the fact that human mortality has been maintained at a low rate is apparently due only to the increase in administration of vaccine. Of the forty-two persons who died from rabies, twenty-one had received antirabies vaccine and twenty-one had not. Among the twenty-one persons receiving vaccine who died, treatment for twenty began within six days after exposure and in one after three weeks. The short incubation period of from two to four weeks in thirteen treated

1. Denison, G. A.; McAlpine, J. G., and Gill, D. G.: Rabies Deaths in Alabama, Am. J. Pub. Health **27**: 869 (Sept.) 1937.

and nine untreated cases indicates that the degree of infection was such that vaccine could hardly have been expected to save many of these patients. Among the treated, 9,800 received Pasteur treatment with a mortality of 0.11 per cent. Since 1930, 25,064 received Semple treatments with ten deaths, or a mortality of 0.04 per cent. These returns, it was pointed out, compare favorably with the larger series reported by McKendrick [2] in his League of Nations Analytical Reviews.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Meeting of Urologists.—The annual meeting of the Southeastern Branch Society of the American Urological Association was held at Birmingham, November 5-6. The following program was presented:

Drs. Henry W. E. Walther and Robert M. Willoughby, New Orleans, Hormonal Treatment of Benign Prostatic Hypertrophy.
Dr. Gershom J. Thompson, Rochester, Minn., Clinical Data Concerning Prostatic Resection.
Dr. Edwin P. Alyea, Durham, N. C., Cystoscopic Removal of Large Ureteral Calculi by Modification of the Usual Manipulative Methods.
Dr. John A. C. Colston, Baltimore, Sulfanilamide (Prontylin) in the Treatment of Genito-Urinary Infections.
Dr. Nelse F. Ockerblad, Kansas City, Mo., Surgery of the Human Ureter.
Dr. Clyde Leroy Deming, New Haven, Conn., Future of Unilateral Nephrectomized Patients.
Dr. Owsley Grant, Louisville, Ky., Obstruction at the Vesical Neck in Children.
Dr. James J. Ravenel, Charleston, S. C., Extravasation from the Lower Urinary Tract.

CALIFORNIA

Plague Infection.—According to *Public Health Reports*, October 29, plague infection has been demonstrated in pools of fleas and in pooled tissue and organs taken from rodents in California as follows: In Fresno County, a pool of 111 fleas from twenty-seven fisheri squirrels, eighty-four fleas from 151 golden mantled squirrels, forty-eight fleas from 139 chipmunks and twenty-seven fleas from ten chickaree (red) squirrels, received at the state department of health laboratory on September 21; a pool of forty-eight fleas from 139 chipmunks and eleven fleas from seventeen chipmunks collected on September 20; a pool of organs from three beecheyi squirrels shot on September 14, and a pool of organs from nine golden mantled squirrels collected October 2. In Placer County, plague infection was demonstrated in pooled tissue from seven beecheyi squirrels, five chipmunks, two wood rats, two alexandrinus rats and three golden mantled squirrels received at the laboratory October 1.

COLORADO

Annual Hospital Meeting.—The Colorado Hospital Association held its thirteenth annual meeting at the Cosmopolitan Hotel, Denver, November 9-10. The speakers included Drs. Paul J. Connor and Roy L. Cleere, president and secretary, respectively, Colorado State Board of Health, Denver, on "The Future of the Hospital and the Doctor" and "Future Relations Between Hospitals and the Public Health Agencies"; Robert E. Neff, Iowa City, president, American Hospital Association, "Patients and Patience," and Dr. William B. Draper, Denver, "Facts and Fallacies of Oxygen Administration."

Midwinter Clinics.—The annual midwinter graduate clinics of the Colorado State Medical Society will be held in Denver December 15-17 at the Shirley-Savoy Hotel, with the Medical Society of the City and County of Denver acting as host. Guest speakers will include:

Dr. Herman L. Kretschmer, clinical professor of genito-urinary surgery, Rush Medical College, Chicago.
Dr. A. Graeme Mitchell, B. K. Rachford professor of pediatrics, University of Cincinnati College of Medicine.
Dr. Robert D. Schrock, professor of orthopedic surgery, University of Nebraska College of Medicine, Omaha.
Dr. Albert J. Brown, professor of surgery at the University of Nebraska College of Medicine, Omaha.
Dr. Don C. Sutton, associate professor of medicine, Northwestern University Medical School, Chicago.

Clinics will be conducted in the mornings at the Colorado General, Children's General and Denver General hospitals.

2. McKendrick, A. G.: First to Sixth Analytical Review of Reports from Pasteur Institutes on the Results of Antirabies Treatment, Quart. Bull. Health Organ. League of Nations, Geneva, August 1930 to December 1935.

CONNECTICUT

Laboratory Pneumonia Service Extended.—On October 1, the bureau of laboratories of the state health department began typing for types I, II, IV, V, VI, VII, VIII and XIV. When the retrenchment program for the bureau was put into effect, pneumonia typing was restricted to types for which therapeutic antiserums were available. Since then antiserums for three additional types have been marketed and the laboratories have extended the typing service to include them. Should other therapeutic antiserums become available to physicians, the laboratories will attempt to test for the specific types involved, the *Connecticut Health Bulletin* announces.

Public Health Day.—The Connecticut Public Health Association has designated the day of its winter meeting, December 1, in Hartford, as "public health day." A conference for health officers, planned by the state department of health, has been arranged for a morning session. Features of the afternoon program will include a discussion of the state cancer control program by Dr. Charles L. Larkin, Waterbury, and a symposium on the treatment and control of pneumonia with the following speakers: Dr. John A. Wentworth, Hartford; Irma E. Reeve, R.N., New Haven; Dr. Mario L. Palmieri, Middletown; Dr. Millard Knowlton, Hartford, and Friend Lee Mickle, D.Sc., Hartford.

DISTRICT OF COLUMBIA

Society News.—Dr. Arthur M. Shipley, professor of surgery, University of Maryland School of Medicine, Baltimore, addressed the Washington Academy of Surgery, October 8, on "Surgery of the Biliary Duct Apparatus." The academy will be addressed December 10 by Dr. Isaac A. Bigger, Richmond, Va., on "Surgery of the Heart and Pericardium."

Symposium on Sulfanilamide.—The Academy of Medicine of Washington devoted its fall meeting November 17 to a symposium on sulfanilamide. Dr. Eli K. Marshall Jr., Baltimore, discussed "Certain Phases of the Pharmacology of Sulfanilamide"; Dr. Sanford M. Rosenthal of the National Institute of Health, "Sulfanilamide and Related New Compounds in Experimental Infections," and Dr. Frederick A. Reuter, clinical professor of urology, George Washington University School of Medicine, "New Work with Sulfanilamide in Clinical Urology."

ILLINOIS

Retires as Director of Laboratories.—Howard J. Shaughnessy, Ph.D., has resigned as director of the division of laboratories of the Illinois State Department of Health, Springfield, to become associate professor of bacteriology and public health at the University of Colorado School of Medicine, Denver. Dr. Shaughnessy has held the position with the Illinois department since 1931.

Society News.—Dr. Frederick B. Moorehead, Chicago, discussed "The Use of Plastic Traction in Jaw Fractures" before a joint meeting of the Sangamon County Medical Society and the G. V. Black District Dental Society in Springfield, November 4.——Dr. Philip Thorek, Chicago, discussed "The Direct and Differential Diagnosis of Acute Gallbladder Disease" before the De Witt County Medical Society at Clinton, October 20. ——Drs. Ralph M. Tyson and Chevalier L. Jackson, Philadelphia, discussed "Diagnosis and Treatment of Foreign Bodies in the Respiratory Tract" before the Peoria City Medical Society in Peoria, November 16. At a meeting of the society, November 2, Drs. Harry Costeff and Julius Steinfeld, Peoria, discussed "Insulin Shock and Other Methods of Therapy in Schizophrenia."——Dr. Paul H. Harmon, Springfield, discussed "Anterior Poliomyelitis" before the Madison County Medical Society, November 5.

Chicago

University News.—Loyola University School of Medicine has annexed the dispensary and outpatient clinical facilities of Mercy Hospital, 2536 Calumet Avenue, to supplement the overcrowded clinics at the medical school. Dr. John G. Powers has recently been officially appointed assistant dean of the medical school.

Society News.—At a joint meeting of the Chicago Orthopaedic Society and the Chicago Roentgen Society, November 12, the speakers were Drs. Daniel H. Levinthal and Hollis E. Potter on "Benign Tumors of Bone—Diagnosis and Treatment" and "Roentgenological Aspects of Low Back Pain" respectively. —— Dr. Charles B. Huggins, among others, addressed the Chicago Urological Society November 18 on "Treatment of Tuberculous Wounds Following Nephrectomy."

Book Fair for Benefit of Medical School. — The Women's Faculty Club of Northwestern University Medical School is sponsoring a book fair, December 2-4, and a book ball Saturday evening, December 4, for the benefit of the medical school clinics. The book fair will be held on the Chicago campus of the university and the ball in the Knickerbocker Hotel. The fair will consist of a display of rare books, prints, fine bindings, valuable first editions, original manuscripts of famous authors, new and used volumes, periodicals, magazines, lithographs, water-color paintings, Christmas cards, gifts and novelties. There will be an author's tea Friday afternoon and lectures Thursday including one by Mrs. Arthur Byfield on "Adventuring Down the Menu." Saturday there will be a "children's day celebration" in Thorne Hall. Costumes will be optional at the ball, although it is suggested that those attending appear as characters from the printed page. Additional information may be obtained from Mrs. Gerard Krost, 6900 Paxton Avenue, Chicago; telephone Hyde Park 2882.

INDIANA

Society News.—Arrangements have been completed to hold all business and dinner meetings of the Indianapolis Medical Society on the third floor of the Indianapolis Athletic Club each Tuesday evening in the future. —— The Northeastern Indiana Academy of Medicine was addressed at Kendallville, October 28, by Drs. Arthur E. Mahle, Chicago, on "Recent Advances in Medical Management of Peptic Ulcer."

Gifts to Medical School Library.—Dr. William N. Wishard Sr., for many years professor of genito-urinary surgery, Indiana University School of Medicine, Indianapolis, has given a collection of pictures to the library of the university's medical center. The collection includes a photograph of the nine men who composed the last faculty of the medical college that was organized in Indianapolis in 1869 and which was combined with the College of Physicians and Surgeons in 1878 to form the Medical College of Indiana, and other photographs of interest in the development of the medical school. About seventy-five medical books were also given to the library by Drs. George C. Fisher and Edwin S. Knox, both of Indianapolis.

LOUISIANA

Society News. — The Tri-Parish Medical Society was addressed at Tallulah October 5 by Drs. Harold G. F. Edwards and Edgar L. Sanderson, both of Shreveport, on "Cancer Is Curable" and "Treatment of Indigent Patients in the Future," respectively.——Dr. Tom Spec Jones, Baton Rouge, discussed "Typhus Fever" before the Bi-Parish Medical Society October 6.——A symposium on syphilis was presented before the Orleans Parish Medical Society, New Orleans, November 8 by Drs. John G. Menville, Edgar Hull, James K. Knowles, John R. Schenken and John A. Trautman.

MARYLAND

Personal.—Dr. Paul Cohen has been named superintendent of the Eastern Shore Branch, Maryland Tuberculosis Sanatorium, Salisbury, succeeding the late Dr. Charles D. Steenken. —— Dr. Harry Friedenwald, Baltimore, has been made an honorary fellow of the Jewish Academy of Arts and Sciences.

Society News.—The Baltimore City Medical Society held a joint meeting with the Medical Society of the District of Columbia in Baltimore, November 19. The speakers were Drs. Charles R. L. Halley, Washington, D.C., on "Typhoid Types of Fever, Frequency and Problems of Diagnosis"; Edgar W. Davis, Washington, D. C., "Endobronchial Tumors: Diagnosis and Treatment," and Arthur C. Christie, Washington, D. C., "Recent Advances and Trends in Radiology." The Baltimore society was addressed November 5, among others, by Drs. Harvey G. Beck and George M. Suter on "The Rôle of Carbon Monoxide in the Etiology of Myocardial Disease."

Syphilis Control Activities. — With the election of Dr. Harry M. Robinson, Baltimore, as permanent chairman, October 21, formal activities of the state's syphilis control program were instituted. Two statewide committees to carry on the program were approved, according to the Baltimore *Sun*. The committee on legislation will be headed by State Senator Raymond E. Kennedy, and the committee on medical facilities will be headed by Dr. Joseph Earle Moore, director of the syphilis clinic of Johns Hopkins Hospital. Seven subcommittees will work under Dr. Moore, covering epidemiology, dispensaries, libraries, hospitalization, neurosyphilis, syphilis in Negroes, and prenatal and congenital syphilis, while five subsidiary committees will be named to represent sections of the state. A survey to determine the extent of and facilities for the treatment of syphilis will be made. The deadline for the study will be February 1, when the material gathered will be incorporated into a report for the governor for legislative action.

MASSACHUSETTS

Society of Physical Therapy Changes Name. — At a recent meeting in Boston the New England Physical Therapy Society changed its name to the New England Society of Physical Medicine. Dr. Robert T. Phillips, Boston, addressed the meeting, November 17, on "Practical Physical Medicine for Chronic Arthritis."

Personal.—Dr. George D. Dalton, Quincy, has been appointed medical examiner of Norfolk County, succeeding the late Dr. Frederick E. Jones, who held the post for almost forty years.——Dr. Rowland Godfrey Freeman Jr., New York, has been appointed assistant psychiatrist of the Judge Baker Guidance Center, Boston.

MICHIGAN

Interns' Case History Contest.—The East Side Physicians' Association agreed at a meeting October 21 to sponsor a contest for the best case history written this year by a first year intern of an East Side Detroit hospital, according to *Detroit Medical News*. Prizes of $100, $50 and $25 respectively will be offered for the best three papers submitted.

Society News.—At a meeting of the East Side Physicians' Association, Detroit, November 18, the speakers were Drs. Robert B. Kennedy and Robert L. Schaefer on "Causes and Treatment of Sterility" and "Clinical Indications for Anterior Pituitary-like Sex Hormones" respectively.——The Washtenaw County Medical Society was addressed November 9 by Drs. Arthur C. Curtis, on sulfanilamide; Russell W. DeJong, benzedrine, and Jerome W. Conn, protamine zinc insulin. All are of Ann Arbor.——Dr. Maurice B. Visscher, Minneapolis, addressed the medical section of the Wayne County Medical Society, Detroit, November 8, on "Physiological Principles of Importance in Heart Failure and Its Treatment." Dr. Andrew C. Ivy, Chicago, discussed jaundice before the society, November 15.——Dr. Ward F. Seeley, Detroit, discussed "Heart Disease in Pregnancy" before the Calhoun County Medical Society, Battle Creek, November 2.——Dr. Joseph L. Baer, Chicago, addressed the Detroit Gynecological Society, November 2, on "The Cervix in Obstetrics and Gynecology."

Director of New Hospital Commission Appointed.—Dr. Joseph E. Barrett, Taunton, Mass., has been appointed director of the State Hospital Commission of Michigan, created by the last legislature under a law effective October 29, to supervise and control all state mental hospitals. Dr. Theophile Raphael, Ann Arbor, has been appointed to the commission, the only physician member at the time of the report. Dr. Leo G. Christian, Lansing, chairman of the legislative committee, Michigan State Medical Society, was also appointed but resigned before the commission held its first meeting November 10. Dr. Barrett graduated at the University of Tennessee School of Medicine in 1922 and served at the State Hospital for Nervous Diseases, Little Rock, Ark., from 1923 to 1928, when he was appointed assistant superintendent of the Taunton State Hospital. In 1931 he was made assistant to the commissioner in the Massachusetts Department of Mental Diseases and in 1934 assistant commissioner. Since resigning from the Massachusetts department in June 1937 he has made surveys of state hospitals in Iowa and Virginia for the National Committee for Mental Hygiene.

MINNESOTA

Personal. — Dr. Edward J. Engberg, St. Paul, has been appointed superintendent of the Minnesota School for Feebleminded, Faribault, to succeed Dr. James Moorhead Murdock, retired.——Dr. Gilbert G. Cottam, Minneapolis, editor of the *Bulletin* of the Hennepin County Medical Society, has been appointed assistant editor of *Minnesota Medicine*, succeeding Dr. Chauncey A. McKinlay, resigned.

Society News.—Dr. Thomas A. Peppard, Minneapolis, discussed "Symptomatology of the Various Leukemic States," and Dr. Owen H. Wangensteen, Minneapolis, "Importance of Immobilization and Posture in the Treatment of Acute Infections of the Extremities" before the Minnesota Academy of

Medicine, November 10.——Dr. Tinsley R. Harrison, Nashville, Tenn., discussed "Cardiac Dyspnea" before the Minnesota Pathological Society, November 16.——Dr. Carl V. Weller, Ann Arbor, Mich., addressed the Hennepin County Medical Society, Minneapolis, November 10, on "Intrinsic Factors in the Causation of Cancer."

Dr. Meyerding Honored.—Dr. Edward A. Meyerding, St. Paul, executive secretary of the Minnesota Public Health Association and secretary of the Minnesota State Medical Association, was honored at a testimonial dinner, November 11, in recognition of his many years' service in the field of public health. Dr. Sidney A. Slater, superintendent, Southwestern Minnesota Sanatorium, Worthington, acted as toastmaster, and speakers included Drs. Jay Arthur Myers, Minneapolis, president of the National Tuberculosis Association; Alfred W. Adson, Rochester, president of the state medical association; Olaf J. Hagen, Moorhead, president of the Minnesota Public Health Association for the past year; James M. Hayes, Minneapolis, president-elect of the state medical association; Everett K. Geer, St. Paul; Arthur T. Laird, Nopeming, and Mrs. A. L. Sperry, Owatonna, who represented the volunteer Christmas Seal workers of the state. Dr. Meyerding has served as executive secretary of the public health association for fourteen years. Prior to that he was director of the division of hygiene and special classes of the public schools of St. Paul for fifteen years. He spent two years in the U. S. Army Medical Corps during the World War and is now a colonel in the reserve. He has been secretary of the state medical association since December 1924 but is now on leave of absence from active duty.

NEBRASKA

Society News.—Drs. Howard B. Hamilton and Benjamin Carl Russum, Omaha, addressed the Omaha-Douglas County Medical Society, November 9, on "Appendicitis in Childhood" and "Fatal Pulmonary Embolism" respectively. Drs. William R. Hamsa and Frank Lowell Dunn addressed the society, October 12, on "Evaluation of Scoliosis Treatment" and "Treatment of Arthritis" respectively.——Dr. Robert D. Schrock, Omaha, addressed the Platte-Loup Medical Society, October 13, on "Plaster versus Splints in Fracture of the Long Bones."

NEW JERSEY

Society News.—Dr. Frank H. Lahey, Boston, addressed the Bergen County Medical Society, Hackensack, November 9, on "Thyroid Diseases," and Dr. Edward M. Z. Hawkes, Newark, first vice president of the Medical Society of New Jersey, discussed activities of the state society.

Tuberculosis Meeting.—Dr. Jay Arthur Myers, Minneapolis, president of the National Tuberculosis Association, was the guest speaker at the annual meeting of the New Jersey Tuberculosis League in New Brunswick, October 22. Among other speakers were Drs. Henry H. Kessler, Newark; Harold S. Hatch, Morristown; Joseph R. Morrow, Ridgewood, and Joseph H. Kler, New Brunswick.

NEW YORK

Pilgrim Hospital Head Appointed.—Dr. Harry J. Worthing, medical superintendent of the Willard State Hospital, has been appointed medical superintendent of Pilgrim State Hospital, Brentwood, to succeed Dr. William J. Tiffany, who recently became state commissioner for mental hygiene. Dr. Worthing graduated from Syracuse University College of Medicine, Syracuse, in 1913.

Society News.—Dr. Stanley P. Jones, Mattituck, addressed the Suffolk County Medical Society in Riverhead October 28 on undulant fever.——Dr. Edgar A. Vanderveer, Albany, was elected president of the New York State Society of Industrial Medicine at its annual meeting in Corning November 4.——Dr. William W. Woodruff, Saranac Lake, addressed the Jefferson County Medical Society, Watertown, in October on "Surgery of the Chest."——Drs. Alvan L. Barach and Norman H. Plummer, New York, and Edward S. Rogers, Albany, presented a program on pneumonia before the Warren County Medical Society, Glens Falls, October 13.——Thomas J. Cook, D.D.S., Philadelphia, addressed the Dutchess County Medical Society, Poughkeepsie, November 10, on "Diseases of the Mouth of Interest to the Physician and Dentist in Relation to Systemic Disease."

Cancer Exhibit and Program.—The Medical Society of the County of Nassau and the Nassau County Cancer Committee jointly presented a public exhibit and program on cancer, October 19, which was attended by about 500 persons in spite of inclement weather. Dr. Louis C. Kress, Buffalo, addressed an audience of women in the afternoon on "Cancer—A Challenge to Women." In the evening Dr. Kress addressed a regular meeting of the medical society on "The Responsibility of the Family Physician to the Cancer Patient," and Dr. Stanley P. Reimann, Philadelphia, on "The Effects of Hormones upon Malignancy." The exhibit included material on cutaneous granulomas, inflammatory carcinoma of the breast, cancer of the lip, pathogenesis of skin cancer, Wilms' tumor of the kidney, development of cancer in burn scars, cancer of the kidney and of the urinary tract, bone tumors, cancer of the lung, melanoma, cancer of the rectum and educational matter prepared by various cancer organizations.

New York City

Personal.—Dr. George Gray Ward, emeritus professor of gynecology of the New York Post-Graduate Medical School and Hospital, Columbia University, was made an honorary fellow of the British College of Obstetricians and Gynecology October 27.

Hospital Presents Clinical Seminar.—The Beth-El Hospital, Brooklyn, presented its fourth annual clinical seminar October 4-7. Mornings were devoted to rounds at the hospital, afternoons and evenings to sessions at the Silver Manor. Among speakers at the evening meetings were Drs. Andrew C. Ivy, Chicago, on "Physiology of the Gastro-Intestinal Tract"; Frederick Tilney, New York, "Encephalitis," and John E. Jennings, Brooklyn, "Cancer of the Breast—Diagnosis, Radiation, Surgery."

Society News.—The annual dinner of the Association for the Advancement of Industrial Medicine and Surgery was held October 20 with the following speakers: Dr. Albert E. Russell, U. S. Public Health Service, "Syphilis Control in Industry"; Dr. Byron P. Stookey, "Herniations of Nucleus Pulposus in Relation to Low Back Pain," and Mr. Bernard Botein, special prosecutor in accident fraud cases, "Present Medicolegal Trends."——The Philadelphia Orthopedic Club met with the section of orthopedic surgery of the New York Academy of Medicine November 19. Among the speakers were Drs. Arthur Krida, on "An Encircling Fascial Band Operation for Hallux Valgus and Splay Foot"; Albert B. Ferguson, "A Standard of Anteroposterior Alinement of the Lumbosacral Joint, with Deductions Concerning Development and Displacement," and Charlton Wallace, "Summary of Results of the 1935 Epidemic of Poliomyelitis."——Drs. Robert H. Melchionna and James R. Lisa addressed the New York Pathological Society, November 18, on "A Study of the Pharyngeal Pituitary Gland" and "Pathological Changes of the Heart in Sudden Death" respectively.

NORTH CAROLINA

Meeting of Urologists.—Dr. Homer G. Hamer, Indianapolis, was the guest speaker at the twelfth annual meeting of the North Carolina Urological Association in Asheville, October 17-18, on "Diagnosis and Treatment of Metastatic Infections of the Kidney." Dr. Claude B. Squires, Charlotte, was elected president.

District Meetings.—A symposium on infections as related to general practice was presented at a meeting of the Eighth District Medical Society in Winston-Salem, October 19, by the following speakers: Drs. Oliver J. Hart and William H. Sprunt Jr., Winston-Salem; Kenneth B. Geddis, High Point; William S. Hester, Reidsville, and Moir S. Martin, Mount Airy. The guest speaker was Dr. Sylvia Allen, Baltimore, on "The Effect of Infections on Mental and Emotional Diseases."——The fall meeting of the Tenth District Medical Society was held at Hendersonville, November 3. Drs. Donnell B. Cobb, Goldsboro, and Wingate M. Johnson, Winston-Salem, president of the Medical Society of the State of North Carolina, were the guest speakers. Dr. Cobb spoke on "Congenital Pyloric Stenosis."

OHIO

Society News.—Drs. Frank E. Stevenson and Merlin L. Cooper, Cincinnati, addressed the fall meeting of the eighth district of the Ohio State Medical Association, October 15, in Zanesville, on "Clinical Aspects of Infantile Paralysis" and "Etiology and Bacteriology of Infantile Paralysis" respectively.——At a meeting of the ninth district in Portsmouth, October 14, the speakers were Drs. Fred W. Rankin, Lexington, Ky., on "Modern Management of Cancer in the Gastro-Intestinal Tract"; Clifford J. Straehley, Cincinnati, "Cardiac Symptoms and Treatment," and George M. Lyon, Huntington, W. Va., "The More Common Infections of Children and Their Management."

Graduate Program in Akron.—The Summit County Medical Society presented its sixth annual graduate program at the Mayflower Hotel, Akron, November 10. The speakers were Drs. B. B. Vincent Lyon, Philadelphia, who spoke on "Methods of Diagnosis and Treatment of Cholecystitis" and "Diagnosis and Management of Peptic Ulcer"; Max Cutler, Chicago, "Breast Tumors" and "Recent Developments in Radiation Treatment of Cancer"; Stewart H. Clifford, Boston, "Intracranial Hemorrhage in the New-Born" and "Diagnosis and Treatment of Important Diseases of the New-Born." Mr. A. R. Jaqua, Cincinnati, gave an address at the dinner on "Economic Pitfalls for the Doctor and His Estate."

Scholarship Offered by State University.—The Elizabeth Clay Howald Scholarship of $3,000 is offered by Ohio State University, Columbus, to "any person who has shown marked ability in some field of study and has in progress work the results of which promise to constitute important additions to our knowledge." The recipient will be expected to devote full time to his investigations, which may be carried on at any place where there are particular advantages for his field of study if he has at any time been connected with the university as student or staff member. If he has not had any connection with the university, he must carry on his work there. Applications must be filed with the dean of the graduate school not later than March 1, 1938. The appointment will be made April 1 and the term will begin July 1, to extend to July 1, 1939.

PENNSYLVANIA

Annual Postgraduate Day.—The Allegheny Valley Hospital, Tarentum, offered its annual postgraduate day November 9 with a group of speakers from Johns Hopkins University School of Medicine, Baltimore, as follows: Drs. Benjamin M. Baker Jr., on "Circulatory Failure" and "The Hypertensions"; William F. Rienhoff Jr., "Surgical Treatment of Pulmonary Diseases" and "Stomach Surgery," and John A. C. Colston, "Kidney Conditions" and "Sulfanilamide in Treatment of Genito-Urinary Diseases."

Twenty-Fifth Anniversary of State Hospital.—The twenty-fifth anniversary of the opening of the Allentown State Hospital was celebrated October 12 with a special program. An oil painting of Dr. Henry I. Klopp, who has been superintendent of the hospital since it was founded, was unveiled as the gift of the medical societies of Lehigh, Northampton and Bucks counties and the Lehigh Valley Homeopathic Society. Dr. William C. Sandy, Harrisburg, secretary of the American Psychiatric Association, paid tribute to Dr. Klopp. Speakers on the program were Drs. Sandy, on "Progress in the Hospital Care of the Mentally Ill During Twenty-Five Years"; Earl D. Bond, Philadelphia, "Evolution of Mental Hygiene in Twenty-Five Years," and James Allen Jackson, Danville, "Extra-Institutional Clinical Activities in Twenty-Five Years."

Philadelphia

Temple University Appointments.—Dr. William N. Parkinson, dean of Temple University School of Medicine, has been appointed vice president of the university. Dr. Oliver S. English was recently promoted to be professor of psychiatry.

Personal.—Charles Kurtzhalz, Chester, formerly executive secretary of the Delaware County Tuberculosis Association, has been appointed executive director of the Philadelphia Health Council and Tuberculosis Committee, to succeed the late Mr. Harvey Dee Brown.

Society News.—The Philadelphia County Medical Society observed Pennsylvania State Health Day with a program November 10, with the following speakers: Drs. William C. Hunsicker, city director of public health, on "Philadelphia Water"; Walter S. Cornell, director of medical inspection, board of education, "Health Status of Philadelphia School Children"; Robert L. Gilman, "Control of Syphilis," and Hobart A. Reimann, "Proposed Work of a Pneumonia Commission." —— Speakers at a meeting of the Philadelphia Pediatric Society, November 9, were Drs. Francis F. Schwentker, Baltimore, on "Chemotherapy of Acute Infections of the Nervous System"; John A. Kolmer, "Vaccination Against Experimental Meningococcus Meningitis," and Donald M. Pillsbury, "Acetarsone in Therapy of Prenatal Syphilis." —— Dr. Ralph S. Muckenfuss, New York, delivered the annual Gross Lecture of the Pathological Society of Philadelphia, November 11, on "Epidemic Encephalitis."——Speakers before the Philadelphia Psychiatric Society, November 12, were Drs. Robert S. Bookhammer and Earl I. Saxe, on "Preliminary Report on Metrazol Therapy of the Psychoses" and Harold D. Palmer and Stephen H. Sherman, "A Study of Involutional Melancholia."

Pittsburgh

Society News.—At a meeting of the Allegheny County Medical Society November 16 the speakers were: Drs. Thomas T. Sheppard on "Diagnosis and Treatment of Acute Respiratory Infections"; George V. Foster, "The Use of Fascia Lata in the Repair of Hernia"; Stuart N. Rowe, "Bilateral Parasagittal Brain Tumors," and Mr. Elbert R. Moses of the Pittsburgh School of Speech, "Fundamentals of Good Speech."

RHODE ISLAND

New England Surgical Meeting.—The annual meeting of the New England Surgical Society was held in Providence October 1-2. Demonstrations were arranged at the Rhode Island and Memorial Hospitals and scientific programs were presented at the Rhode Island Hospital and the Rhode Island Medical Library Auditorium. Among those who presented papers were:

Dr. Philemon E. Truesdale, Fall River, Mass., Subperiosteal Resection of the Manubrium for Funnel Chest.
Dr. George R. Dunlop, Worcester, Mass., Acute Hemorrhagic Pancreatitis.
Dr. Charles C. Lund, Boston, Operative Treatment of Ulcerative Colitis.
Dr. John S. Hodgson, Boston, Relief of Pain in Malignant Disease.
Dr. Horace K. Sowles, Boston, Reconstruction Operations for Hypertrophy of the Female Breast.

Dr. John M. Birnie, Springfield, Mass., was elected president and Dr. John F. Gile, Hanover, N. H., secretary.

TEXAS

Society News.—Dr. Bernard H. Bayer, Houston, addressed the Harris County Medical Society, Houston, October 13, on "Perforated Peptic Ulcer."——Dr. Foster Kennedy, New York, was the guest speaker at the semiannual meeting of the Texas Surgical Society in San Antonio October 11-12; his address was on "The Organic Background of Mind."——Dr. Herman W. Johnson, Houston, addressed the Jefferson County Medical Society, Beaumont, October 11, on "Management of Obstetrical Emergencies."——The annual meeting of the Panhandle Medical Society was held in Pampa October 12-13, with the following guest speakers, among others: Drs. Arthur E. Hertzler, Halstead, Kan., on "Operating Room Diagnosis of Uterine Bleeding"; Morris Edward Davis, Chicago, "Treatment of Hemorrhage Late in Pregnancy"; Otto Jason Dixon, Kansas City, Mo., "Modern Treatment of Mastoid Disease," and James R. Jaeger, Denver, "Surgery of the Cranial Nerves."

VERMONT

Typhoid at Brandon.—Eight cases of typhoid with one death occurred in a single family in Brandon recently, according to a newspaper report. The first patient was an 8 year old girl who became ill after swimming in a river. Subsequently seven other members of her family developed typhoid. A brother died October 14.

VIRGINIA

Personal.—Dr. Warren A. Colton, clinical director of the Veterans' Administration Facility, Kecoughtan, has been named chief medical officer to succeed Dr. Edward N. Schillinger, who was recently transferred to Atlanta. Dr. Harvey C. Hardegree, recently on the staff at Excelsior Springs, Mo., has succeeded Dr. Colton as clinical director.

Specialty Society Elections.—Several specialty societies held their annual meetings and elected officers during the recent meeting of the Medical Society of Virginia in Roanoke. Dr. Frederick M. Hodges, Richmond, was made president of the Virginia Roentgen Ray Society, and Dr. Vincent W. Archer, Charlottesville, secretary. Dr. Foy Vann, Norfolk, was elected president and Dr. Bernard H. Kyle, Lynchburg, secretary of the Virginia Orthopedic Society. Dr. W. Ambrose McGee, Richmond, was made president and Dr. John M. Bishop, Roanoke, secretary of the Virginia Pediatric Society. The Virginia Society of Obstetricians and Gynecologists elected Dr. Flavius O. Plunkett, Lynchburg, president, and Dr. Eugene S. Groseclose, Lynchburg, secretary. Dr. William W. S. Butler, Roanoke, was elected president of the Virginia Urological Society and Dr. Lawrence T. Price, Richmond, secretary.

WEST VIRGINIA

Schwinn Lecture.—Dr. Arthur L. Jones, Wheeling, delivered the second Jacob Schwinn Lecture of the Ohio County Medical Society in Wheeling, November 19, on "Obstructive Uropathy." The lecture was established in honor of Dr. Schwinn, who has practiced more than fifty years in Wheeling and has served as president of the county society and of the West Virginia State Medical Association. He is 82 years old.

WISCONSIN

Physicians Honored.—Citizens of Little Chute gave a testimonial dinner October 13 to honor Dr. Joseph H. Doyle on his fortieth year of medical practice. Dr. Doyle graduated from the Wisconsin College of Physicians and Surgeons, Milwaukee, in 1897. He has been president of the village school board for twenty-one years and a director of the bank since its organization in 1907. In 1910 he was president of the Outagamie County Medical Society.——The Sauk County Medical Society honored Dr. Marcus Bossard, Spring Green, with a special program October 28 marking his fiftieth year of practice. Dr. Bossard graduated from Bellevue Hospital Medical College, New York, in 1886 and after a year of graduate work began practice in Spring Green in 1887. He has also practiced in Milwaukee and Prairie du Sac. Guest speakers at the dinner were Drs. Harold E. Marsh, Reginald H. Jackson and Addie M. Schwittay, all of Madison.

Committee to Study Hospital Insurance.—At the recent annual meeting of the Medical Society of Wisconsin a special committee was appointed to make a thorough study of hospital insurance, reviewing the entire field of hospital management in Wisconsin with a view to the possible need for an insurance program. Special actuarial and legal counsel will be employed to study the element of risk and thus develop a sound factual basis for the work of the committee. Members of the committee are Drs. Stanley J. Seeger, Milwaukee, chairman; Stephen E. Gavin, Fond du Lac; Raymond G. Arveson, Frederic; Edward L. Tharinger, Milwaukee; Albion H. Heidner, West Bend; Mr. J. George Crownhart, Madison, secretary of the state medical society; Sister Mary Bernadette, superintendent of St. Mary's Hospital, Madison; Rev. H. L. Fritschel, Milwaukee, administrator of Milwaukee Hospital; Mrs. C. D. Partridge, Cudahy, executive secretary of the Wisconsin State Nurses' Association, and Mr. C. I. Wollan, La Crosse, manager of La Crosse Lutheran Hospital.

GENERAL

Special Board Examination.—The American Board of Dermatology and Syphilology announces that a written examination for Group B applicants will be held in various cities April 16. Oral examinations for applicants in groups A and B will be given in San Francisco, June 13-14, 1938. Applications should reach the secretary, Dr. Clarence Guy Lane, Boston, before Feb. 15, 1938.

National Anti-Syphilis Committee.—Gen. John J. Pershing has accepted the chairmanship of a National Anti-Syphilis Committee organized by the American Social Hygiene Association to further the campaign against venereal diseases. Dr. Ray Lyman Wilbur, president of Stanford University, California, is vice chairman and Mr. Charles H. Babcock is chairman of the executive committee. A drive for funds to finance the campaign will be made beginning Feb. 2, 1938, which has been designated the second National Social Hygiene Day.

Academy of Tropical Medicine.—The fourth annual dinner of the Academy of Tropical Medicine will be held in New Orleans, December 2, at La Louisiane Restaurant during the meeting of the Southern Medical Association. Dr. George C. Shattuck, Boston, will be toastmaster and Dr. Wilbur A. Sawyer, director of the International Health Division of the Rockefeller Foundation, New York, will give his presidential address on "The Importance of Environment in the Study of Tropical Diseases." The first award of the Theobald Smith Medal will be made by Col. Charles F. Craig, New Orleans, past president of the academy, to Marshall A. Barber, Ph.D., of the staff of the International Health Division of the Rockefeller Foundation, New York.

Jacobi Fellowship for Women Physicians.—The Women's Medical Association of New York offers the Mary Putnam Jacobi Fellowship of $1,000 for one year's graduate work in the medical sciences. The fellowship is open to any woman graduate of an approved medical school, who must be indorsed by the head of the department in which her previous work has been done. The recipient must give full time to the problem selected and should preferably make the study abroad; if she is not a resident of the United States, she should preferably study in the United States. Applications for the 1938-1939 fellowship should be filed before April 1, 1938, accompanied by statements as to health, educational qualifications and the proposed problem for investigation to the chairman of the fellowship committee, Dr. Annie S. Daniel, 321 East Fifteenth Street, New York.

Society News.—Dr. Samuel B. Scholz Jr., Philadelphia, was elected president of the Association of Life Insurance Medical Directors at the annual meeting in New York October 28.——Dr. Harold H. Mitchell, Long Island City, N. Y., was chosen president-elect of the American Association of School Physicians at the annual meeting in New York in October. Dr. John Sundwall, Ann Arbor, Mich., is president. Drs. Fredrika Moore, Cambridge, Mass., and James F. Rogers, Washington, D. C., were elected vice presidents and Dr. Arville O. DeWeese, Kent, Ohio, reelected secretary.——Dr. Willard C. Rappleye, dean of the College of Physicians and Surgeons, Columbia University, New York, was chosen president-elect of the Association of American Medical Colleges at its meeting in San Francisco in October. Dr. William S. Middleton, Madison, Wis., was elected vice president and Dr. Fred C. Zapffe, Chicago, remains as secretary. Dr. Alan M. Chesney, Baltimore, was installed as president.

Medical Bills in Congress.—*Changes in Status:* S. Res. 194 and H. Res. 352, submitted by Senator Copeland, New York, and by Representative Chapman, Kentucky, have been agreed to, respectively, by the Senate and the House, requesting the United States Department of Agriculture to transmit to the Senate and House information with respect to the deaths incident to the use of Elixir of Sulfanilamide. *Bill Introduced:* S. 3008, introduced by Senator Davis, Pennsylvania, proposes to amend the existing laws against unlawful restraints and monopolies so as to provide that nothing in such laws shall prevent persons engaged in commerce from granting differentials in the prices of commodities sold to, or sold for resale to and actually resold to, any corporation organized and operated exclusively for religious, charitable, scientific, literary or educational purposes, or for the prevention of cruelty to children or animals, no part of the net earnings of which inures to the benefit of any private shareholder or individual, and no substantial part of the activities of which is carrying on propaganda, or otherwise attempting to influence legislation.

Society of Tropical Medicine.—The thirty-third annual meeting of the American Society of Tropical Medicine will be held in New Orleans November 30-December 3 in conjunction with the Southern Medical Association. Dr. George W. McCoy of the U. S. Public Health Service will deliver the second Charles Franklin Craig Lecture on "The History of Leprosy in the United States." Other speakers at the sessions, some of which will be held jointly with the National Malaria Committee, will include:

Dr. Lee Foshay, Cincinnati, Serum Treatment of Tularemia.
Dr. William M. James, Panama, R. P., Emetine Therapy.
Dr. George C. Shattuck, Boston, Clinical Syphilis in the American Indian.
Drs. M. Ruiz Castañeda and J. Vargas-Curiel, Mexico, D. F., Skin Test for the Detection of Typhus Susceptibles.
Drs. Noel Paul Hudson, Columbus, Ohio, and Edwin H. Lennette, Chicago, Incidence of Poliocidal Serums in Regions Where Poliomyelitis Epidemics Are Infrequent.
Dr. Richard P. Strong, Boston, Bartonella Infection.

Dr. Herbert C. Clark, Panama, R. P., will deliver his presidential address at a luncheon December 1 at the Broussard Restaurant on "Development of International Transportation and Its Effect on the Practice of Medicine."

Prize to Inventor of Cyclotron.—Ernest O. Lawrence, Ph.D., professor of physics, University of California, Berkeley, received the Comstock Prize of the National Academy of Sciences at the annual meeting in Rochester, N. Y., in October, for his development of the cyclotron. The Comstock Prize, which carries an honorarium of $2,500, is awarded every five years "to the bona fide resident of North America who shall have made, in the judgment of the academy, the most important discovery or investigation in electricity or magnetism or radiant energy." With the cyclotron, an apparatus in which rays of enormous energy are produced, Dr. Lawrence has been able to break up atoms and transmute them into other atoms, some of which are radioactive. At the academy meeting Dr. Lawrence reported that a new cyclotron is being built in which even more powerful rays will be formed; it will weigh 220 tons. The new machine will be used both for research on transmutation of elements and for medical and clinical research on the possible curative values of the various types of radiation, it is reported. Dr. Lawrence, who is 36 years old, is a native of South Dakota. He graduated from the University of South Dakota in 1922 and took his doctorate at Yale University in 1925. He was appointed associate professor of physics at California in 1928 and became professor in 1930.

Annual Report of the Red Cross.—Measures to reduce the heavy toll of accidents and relief rendered during the flood in the Ohio and Mississippi Valley last January were the high points in the experience of the American National Red Cross

during the fiscal year ended June 30, according to the annual report just issued. First aid training was widened, 256,884 certificates having been issued, an increase of 34,191 over the previous year; 81,291 were issued in life saving. Emergency first aid stations were established at 2,513 points and plans had been made for 3,283 more. In view of the fact that home and farm accident fatalities outnumber all other types of accidental deaths, the Red Cross began in 1935 a home and farm accident prevention program. The report states that 1,776 chapters requested material for such programs and that check lists showing hazards of homes and farms were distributed to seven million homes. Medical and health services were especially important during the January flood and the New London, Texas, school disaster, as well as in the period following the spring tornadoes in the South in 1936. Special hospitals were set up for flood victims stricken with influenza and pneumonia during the flood and in Arkansas an emergency hospital was established to cope with an epidemic of cerebrospinal meningitis. The report lists 1,035,764 visits by 666 public health nurses, of which 234,515 were maternity visits and 425,543 visits to the sick. The Red Cross classes in home hygiene and care of the sick gave certificates to 54,830 students. The financial statement shows that the Red Cross had assets amounting to $19,782,279.28 as of June 30. During the fiscal year it had expended $25,984,999.28, which included contributions for relief during the Ohio and Mississippi flood amounting to $25,312,167.70, said to be the largest fund ever received for disaster relief during peace time.

FOREIGN

Anatomical Society Meeting. — The forty-fifth annual meeting of the German Anatomical Society was held in Königsberg, East Prussia, August 25-28. Dr. Ross G. Harrison, Sterling professor of biology, Yale University School of Medicine, New Haven, Conn., was president and acted as chairman of all sessions. Drs. Charles C. Macklin, London, Ont., and Allan L. Grafflin, Boston, were among the participants in the meeting.

Consulting Centers for Rheumatism. — At the International Congress on Rheumatism and Hydrology, to be held in Oxford, England, March 26-31, there will be an exhibition of plans for consulting bureaus for rheumatic patients, according to present plans. If there is sufficient interest and if funds can be obtained, prizes may be offered. For details apply to Dr. J. F. L. van Breemen, Keizersgracht 489, Amsterdam, Holland.

Government Services

Changes in U. S. Public Health Service

Dr. John T. McNabb, assistant surgeon, reserve corps for active duty, U. S. Hospital for Defective Delinquents, Springfield, Mo.

Dr. Wixom S. Sibley, assistant surgeon, regular corps, U. S. Marine Hospital, Mobile, Ala.

Dr. Carl V. Morrison, assistant surgeon, reserve corps, U. S. Public Health Service, Springfield, Mo.

Dr. Andrew B. Steele, assistant surgeon, reserve corps, Lewisburg, Pa.

Dr. Frank A. King, surgeon, reserve corps, U. S. Marine Hospital, New York.

Dr. Thornton L. Waylan, assistant surgeon, reserve corps, U. S. Marine Hospital, Cleveland.

Dr. James F. Spindler, assistant surgeon in the reserve corps for active duty at the U. S. Public Health Service Dispensary, Washington, D. C.

Dr. Lucius A. Salisbury, assistant surgeon, reserve corps, for active duty, U. S. Marine Hospital, New York.

Colonel Tuttle Named Medical Director of United Air Lines

Col. Arnold D. Tuttle, medical corps, U. S. Army, for four years commandant of the School of Aviation Medicine, Randolph Field, Texas, has been appointed medical director and chief flight surgeon of United Air Lines. Colonel Tuttle will retire from the army. In his new position he will personally supervise the physical fitness of the company's flying personnel and will carry on research projects dealing with the promotion and maintenance of safe flying as far as the human element is concerned. According to a report from the United Air Lines, the company will provide space at its operation headquarters at the Chicago Airport for Colonel Tuttle's research department. Colonel Tuttle, who is 57 years old, graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1906.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 30, 1937.

The Physician of the Future

In an address to a meeting at Leeds, held as part of the national health campaign, Lord Horder said that inevitably the physician's work in the future will be more and more educational and less and less curative. More and more he will deal with physiology and psychology and less and less with pathology. He will spend his time keeping the fit fit rather than in trying to make the unfit fit. And we must make it worth his while to do this work. This reorientation of his education and his work is overdue, and it will remain overdue until reorientation takes place in the attitude of the health authorities toward him and toward his sphere of usefulness. And we must not think that his education is finished for all time when he becomes qualified. It is a duty we owe to every doctor to get him back now and again to the stimulating and informing atmosphere of the wards and the laboratories and, no less helpful, to the atmosphere created by his colleagues and teachers.

This means of course spending more money, but Lord Horder could not conceive how money could be better spent, and as a long term investment he believed it would pay over and over again. It was at the periphery and not only at the center where energy and knowledge were required. The physician was the expert who made contact with the individual and acted as the conducting medium between the individual and the facilities afforded by the health services through the local authorities. And not only the health services: there was the important matter of physical training and recreation. Grants were good and sergeant majors were useful, but the physician's training was essential to the proper use of physical methods in the production of national fitness. And so also in the equally important matter of the proper selection and the proper preparation of food. If economics had let us down—and it seemed as though it had—medicine must do what it can to hold the fort until economics came once more to its help.

Increase of Functional Nervous Diseases

While modern sanitation has greatly diminished or extinguished epidemic diseases such as plague, cholera, smallpox and typhoid, the stress of civilization has greatly increased functional nervous diseases. It is only in recent years that a hospital, the Tavistock Clinic, devoted entirely to the treatment of these diseases, has been established. So great has been the demand on its services that a request for $1,500,000 is being made so that it can erect larger premises. The duke of Kent, who is president, took the chair at the British Medical Association House, where an appeal was made for funds. Sir Farquhar Buzzard, professor of medicine in the University of Oxford, said that at least one third of all the sickness in this country was due to causes which were not organic in origin. About 50 per cent of the 15,000,000 insured population of England and Wales "went on the panel" every year and over 31,000,000 weeks of working time was lost annually by industrial sickness alone. A conservative estimate was that the neuroses and psychoneuroses were annually responsible for the loss of 10,000,000 weeks of working time. If he should be placed at the head of a great business organization, the first thing he would do would be to take on a whole time medical psychologist to study his employees and their conditions in health and deal with all cases of nervous disorder as they arose. The sick roll would rapidly diminish, the certificates of debility, gastritis and anemia would gradually become almost unknown, and the efficiency and happiness of the staff would be enhanced.

Lord Hollenden (industrialist) said that their most urgent problem had been to meet the demands for treatment of those who could not afford the full private fees or any fees at all. The ultimate solution of the nation-wide problem of psychoneurotic illness must lie largely in supplementing medical education, for at present there were not enough physicians who had acquired the special knowledge and skill in treatment which were needed for these conditions. The teachers in this branch of medicine were mostly in London for the moment, and consequently most of the training of graduate students must be carried out there. As provincial centers got the staff and establishment which they needed, the problems of providing treatment and doing preventive work would come nearer solution.

The Protection of Food Against Poison Gas

The government is taking the most minute precautions against attacks on this country by poison gas. The latest is the issue of a pamphlet for producers, manufacturers and distributors of foods regarding protection against contamination by poison gas in time of war, which has been issued by the Air Raids Precautions Department of the Home Office. It is pointed out that foodstuffs, for the most part, absorb gas readily and, if badly contaminated, would have to be destroyed. The protection afforded by different types of packing materials is stated. These range from containers, such as hermetically sealed glass bottles or cans, which when undamaged give complete protection, to ordinary sacks, such as are used for flour or grain, which give almost no protection. It is recommended that if it is necessary in an emergency to stack foodstuffs in open dumps or depots they should be covered by large tarpaulins. Open stores of grain or fodder should be similarly protected.

There are also hints for shopkeepers. When an air raid warning has been received, the shop should be completely closed up to keep out poison gas. Close fitting doors, windows or shutters will be required. Stocks should be stored in such a way as to prevent any gas that may enter the shop from penetrating to the food. All supplies should be kept as long as possible in their original packing and further protection given by keeping them in cupboards, drawers and boxes instead of on open shelves. These precautions would be necessary throughout a war, as the period of warning before an air raid is likely to be short. The protection of food in private houses will be dealt with in a handbook for householders, now being prepared.

"A Blot on London Medicine"

The medical schools of England for long worked in isolation. One of the great achievements of Lord Moynihan was to break down this isolation in the case of the surgeons by founding first a surgical club and then the Association of Surgeons of Great Britain. A similar service for medicine was done by Osler and others in founding the Association of British Physicians. But much more remains to be done. In his Harveian oration, delivered to the Royal College of Physicians, Sir Arthur Hurst recalled that he was the 281st orator who officiated on St. Luke's day in commemoration of the famous physician of King Charles I. He reviewed the recent advances in the physiology of the stomach and their bearing on our new knowledge of the causation and treatment of microcytic and macrocytic anemia and subacute combined degeneration of the cord, in which he himself has had an important part. In the past the international relations of the college had been limited. It was still a blot on London medicine that there was so little intercommunication between the staffs and students of the twelve teaching hospitals, in striking contrast to the University of Paris, where students were free to attend clinics and lectures in any hospital they pleased. Visitors from the dominions and America generally knew more about the methods of teaching and the day to day work of the London hospitals than the hospital physicians themselves, who were satisfied to continue their activities in far from splendid isolation. He suggested that the college might renew old associations with the schools of Padua and Leyden, where so many of their seventeenth and eighteenth century fellows received the greater part of their medical education, and enter into relations with the American College of Physicians, whose fellowship was open to Canadians.

Development of the Oxford Medical School

Graduates of the ancient universities of Oxford and Cambridge generally complete their medical training at the London hospitals, as the hospitals in Oxford and Cambridge are small and therefore limited in material for clinical teaching. But the munificent gift of $1,000,000 from Lord Nuffield (the automobile magnate) has rendered great advances possible at Oxford. Professors of surgery and of obstetrics and gynecology are to be appointed, and new wards for their use are to be added to the Radcliffe Infirmary, with operating and x-ray amphitheaters. A new wing is to be added to the maternity of the hospital. Lord Nuffield has also offered the university $5,000,000 with a site of the approximate value of $500,000 for a college for graduate studies. Lord Nuffield's gifts are without precedent in the history of the university. Facilities for clinical research are to be organized which will be at least equal to those provided in the various scientific departments of the university.

The British Medical Association and Precautions Against Air Raids

The British Medical Association is taking steps to make a survey of the medical profession with a view to ascertaining how many physicians in each area would be likely to be available in such emergencies as air raids and in what capacity, having regard to their engagements and experiences. To this end physicians will be circularized and asked to state whether they would be prepared to offer their services on the understanding that they will have an opportunity every year of restating their wishes.

PARIS

(From Our Regular Correspondent)

Oct. 30, 1937.

Opening of Hospital of the Foch Foundation

Reference was made previously to a large hospital under construction in a Parisian suburb as a memorial to the late Marshal Foch. The hospital was opened for the reception of patients October 19, in the presence of Marshal Foch's widow, the president of the French Republic and his cabinet. The corner stone of this latest addition to hospital resources here was laid in 1931, but progress in its construction was delayed by lack of funds. The majority of the funds (80 per cent) has been donated by Americans as a token of the ties which bind France and the United States. One of the most active workers here in raising the funds was Mrs. Jacques Balsan (née Vanderbilt). The new hospital is eleven stories high, includes a central and two lateral wings, and has a capacity of 340 beds and a wing for 100 nurses. The operating and sterilizing rooms occupy the top floor, and the lower floors contain wards and private rooms. All rooms of the hospital are provided with facilities for air conditioning.

The aim of the organizers of the hospital is to take care of the middle class public (students, teachers, artists, government employees and large private corporation clerks) who cannot afford to enter a private hospital or go to one of the many public institutions in Paris. The official title of the new hospital will be Mount Valerian Medical Foundation, because a Foch Foundation already exists in Paris. The new hospital is located just across the Seine from the Bois de Boulogne, the great public park here, in the suburb of Suresnes on the flanks of Mount Valerian.

Pulmonary Reactions to Vaporized Solutions

At the July 27 meeting of the Académie de médecine a report was read by Biancini and Delaville of some experimental work on the effects on the lungs of the inhalation of various vaporized solutions. In a previous report read at the January 26 meeting the authors stated that chemical particles in suspension in a gaseous atmosphere when inhaled passed beyond the lung and could be demonstrated in the urine. In the second series of experiments, rabbits and guinea pigs were provided with a gas mask or placed under a 5 liter bell jar. The following solutions in the form of a vapor were then introduced and allowed to escape at the top of the bell jar: suspensions of colloidal iron, oily emulsions, isotonic and hypertonic saline solutions and distilled water. The animals were killed at intervals varying from immediately after the experiment to six days. On microscopic study of the lungs, two types of effects were noted: 1. Following the inhalation of the vaporized colloidal iron suspensions and oily emulsions, a slight edema of the alveolar epithelium and inclusion of the iron particles or droplets of oil was noted. 2. With the isotonic and hypertonic saline solutions, a widespread hyperemia is noticeable. In both cases a variety of tissue reactions, slight to intense, takes place in the pulmonary alveoli. The reactions take place within a few minutes after the vaporization experiment is begun.

These observations, according to the authors, may clear up some still obscure points regarding certain respiratory attacks like those seen in asthma and in fogs. They also are instructive in calling attention to the potential dangers of drugs in vapor form which may have a strong irritant action on the pulmonary alveoli. Caution must be exercised in giving these treatments, just as in the case of short wave currents.

Spirochetal Jaundice as an Occupational Disease

At the July 27 meeting of the Académie de médecine a paper was read by Janbon and his associates on an epidemic of spirochaetosis ictero haemorrhagica in twenty-three miners. The pulpified kidney, liver and spleen of 125 rats (Mus decumanus) captured in the mine were inoculated into guinea pigs according to the Martin and Pettit technic, all with negative results. The sero-agglutination test, however, revealed a latent "spirochetose inapparente" form of the disease in 20 per cent of the inoculated guinea pigs. Search for spirochetes in the mud and on the walls of the galleries of the mine were negative. None of the miners had been bitten by the rats, but investigation revealed the fact that their food had often been contaminated by the rats and also that many of the miners had drunk the water in the lower galleries of the mine.

Prof. Emile Sergent Retires from Public Hospital Work

One of the leading internists of Paris, Prof. Emile Sergent, has reached the age limit and will be obliged to give up teaching in the large public hospitals here. His wards in the recently torn down Charité Hospital were the center of attraction for many of the younger men, who have since attained high rank in the profession. Professor Sergent is especially well known as a phthisiologist and has frequently been the guest of medical societies in all parts of the world.

Homage to Professor d'Arsonval

An admirer and friend of Professor d'Arsonval, professor at the Collège de France and internationally known as a leader in the field of electrical research, has just written his biography, under the title "Sixty Years of Science." d'Arsonval is now 86 years of age and came to Paris from central France in 1873. He entered the laboratory of Claude Bernard while still a medical student, and after the great physiologist's death he was appointed assistant to his successor, Brown-Séquard. In 1881 a special laboratory of biophysics was created for d'Arsonval and later he succeeded Brown-Séquard in the chair of medicine in the Collège de France. During the World War he was active in the munitions service and in 1925 was made a grand officer and later was given the grand cross of the Legion of Honor.

His research work on high frequency currents has made d'Arsonval known all over the scientific world. His name will always be associated with the perfection of high frequency apparatus as employed in medicine.

BERLIN

(From Our Regular Correspondent)

Oct. 11, 1937.

Distribution of German Physicians in 1937

A statistical report on the number and distribution of German physicians in the year 1937 has just appeared in the *Deutsches Aerzteblatt,* organ of the German Physicians' Association. The total number of physicians has increased in comparison with 1935 from 52,342 to 55,259. This increase is in part ascribable to the fact that information with respect to members of the medical profession is more readily obtainable under the new regulations.

As in former years, the geographic distribution of physicians within the German reich was found to be disproportionate; the number of physicians to each 10,000 of population varies from a minimum of 4.8 to a maximum of 15.8 (the latter figure represents Berlin). The 3,000 newly listed physicians were distributed rather evenly throughout the reich exclusive of Berlin. In the years 1933 and 1934, after the emigration of numerous Jews, the number of Berlin physicians underwent no small decrease, but it rose again subsequently and would have attained the 1932 level had not the law which forbids settlement of new doctors in Berlin supervened (there were 6,785 physicians in Berlin in 1932, 6,713 in 1937).

All members of the medical profession belong in one of the following five principal classifications:

Directors of institutions	4,006
Physicians on the staff of institutions, but below the rank of director (assistants)	9,783
Physicians in government employ, health officers, confidential insurance consultants, physicians engaged only in research and so on	5,200
Physicians professionally inactive	3,586
Independent practitioners	37,525

The sum of the foregoing figures will be found to exceed the actual total number of physicians because of certain duplications of classification; for example, the director of an institution or a doctor employed by the government may at the same time maintain a private practice. Of the "directors," approximately one third are, in addition, officials of health departments and so on, senior physicians of hospitals and university professors.

The number of doctors who can be classed only as directors of hospitals and other institutions for the sick amounts to 3,292; about 28 per cent of these are surgeons, 18 per cent internists and 7 per cent gynecologists and neurologists. Of physicians in governmental employ, more than 21 per cent still maintain private practice. The number of professionally inactive physicians increased from about 2,000 in the year 1935 to about 3,500, chiefly as a result of improved means of identification through compulsory registration. The figures show no increase in the number of independent practitioners. The number of insurance physicians has undergone a slight decline, owing, no doubt, to the stricter prerequisites of admission to panel practice.

The number of specializing physicians amounts to 15,680, namely, 28.4 per cent of all physicians, against a corresponding figure of 30.7 per cent in the year 1935. Double designations such as "specialist in surgery and gynecology" or "specialist in dermatology and urology" are no longer permitted; mention of a second specialty must not be made. A specialist may of

course continue to maintain a general practice. Of those specializing physicians who formerly used the designation "specialist in surgery and orthopedics," approximately one half chose to retain the style "specialist in surgery," the other half that of "specialist in orthopedics." This new ruling on nomenclature has exercised a certain influence on the computations with regard to the specialties in 1937.

Percentage of the Total Number of Specializing Physicians

	1937	1935
Internists	16.1	16.5
Surgeons	15.3	10.0
Gynecologists	10.6	9.8
Dermatologists	11.1	11.3
Otorhinolaryngologists	10.0	9.6
Ophthalmologists	8.6	8.5
Pediatricians	7.4	7.3
Neurologists and psychiatrists	10.1	10.2
Phthisiologists and other specialists in diseases of the lungs	3.3	3.1
Gastrologists	1.2	1.2
Urologists	0.9	1.1
Orthopedists	2.3	1.6
Specialists in oromaxillary diseases	0.9	1.0
Roentgenologists and radiologists	2.2	2.0

The number of women physicians has increased from 3,379 in 1932 and 3,644 in 1935 to 4,339 in 1937. Whereas the total number of physicians showed in 1937 a 5.6 per cent increase over 1935, the number of women physicians increased by 19.1 per cent.

Women Physicians in 1937 (in Percentages of All Women Physicians)

Class of Physicians	1937	1935	1932
Independent practitioners			
(a) In general practice	35.7	48.8	52.5
(b) In the specialties	15.5	19.4	21.4
Employed	31.8	24.2	21.8
Professionally inactive	17.0	7.6	4.3

According to the foregoing figures in the table of women physicians, the number of women in private practice, and particularly the number of those in general practice, has undergone a further decline. Nearly one third of the women physicians are employed, 225 of these occupying positions in various public health services. Of specializing women physicians nearly one half are pediatricians, second in numerical rank are the gynecologists, and next follow the ophthalmologists and the internists.

A special chapter of the report deals with Jewish physicians. In the new register of physicians all those who under the "Nuremberg Laws" are considered Jews are specially listed as such. On the other hand the so-called hybrids, namely, half-Jews and quarter-Jews, receive no special racial designation in the register. There are 4,220 Jewish physicians registered; they constitute 7.7 per cent of all physicians within the reich. If only practitioners are counted, then of 37,525 doctors, 3,748 (that is about 10 per cent) are Jews. Of the Jewish group, 408 are engaged in neither private nor insurance practice. In the larger cities there are 3,179 Jewish doctors practicing medicine and of this number 1,710, or 53.8 per cent, are specialists. Among Jewish physicians the specialties of predilection according to the statistics are dermatology and venereology, internal medicine, gynecology and pediatrics. Besides the Jewish doctors, 350 "hybrids" are physicians and in addition there are 210 doctors officially listed as "of Jewish affinity"; namely, non-Jewish men whose wives are Jewish. Members of the last named group are excluded from the insurance practice along with the non-Aryan doctors. One pair of Jewish grandparents in the ascendancy of a physician is sufficient basis for exclusion from insurance practice.

Alcoholism Among School Children

Dr. Johannsen, public health official of Hechingen (Württemberg), elicited some surprising data from his investigation of the indulgence in alcoholic beverages by school children of the community. He found that drinking among the young was quite common throughout the district; 75 per cent of the school children were accustomed to consume alcoholic beverages and 19 per cent did so daily. Of the 5,207 school children, it was possible to question all but sixty. In 923 instances, children affirmed that even younger brothers and sisters already partook of alcoholic drinks.

New wine, the beverage most commonly consumed, is known to possess a fairly high alcoholic content. The second most frequently consumed beverage was beer. Wine, properly speaking, was the beverage named in 108 instances, spirits in forty-eight instances. Twenty children stated that they had been intoxicated on several occasions. Some remedial measures for this state of affairs were to be instituted.

Collaboration of the German Red Cross in the Fight Against Disease

The German Red Cross, according to its constitution, is committed to the fight against epidemic and other disease. The central depot of the Red Cross in Berlin-Neubabelsberg serves as the base of supplies. Here are kept, for emergency use in time of epidemics or disasters of any sort, a huge number of portable hospital and living barracks of the Doecker type. These portables are collapsible and can be shipped in packing cases. They are 15 meters long by 5 meters wide and are double walled. Special foundations are unnecessary, as the floors are adjustable. A portable together with all its necessary furnishings (bedsteads, mattresses, bed linen, towels, nightstands, buckets, water pitchers, wash basins and so on) can comfortably be transported in an ordinary railway coach and unloaded in a few hours at a siding. Recently a new service of motor trucks (owned by the railroads) has been introduced for shorter hauls. This transport service is available on Sundays as well as on week days. The setting up of the portables is entrusted to a specially trained mounter and together with the aid of local agencies the entire process of installation requires but a few hours. So-called sickness contracts are entered into in advance between the Red Cross and the party to whom the portables are lent; in this agreement are defined the responsibilities of both contracting parties relative to the quite formidable costs of installation and maintenance.

SWITZERLAND

(From Our Regular Correspondent)

Oct. 16, 1937.

International Medical Week

The third International Medical Week in Switzerland, like the first and second weeks promoted by the *Schweizerische medizinische Wochenschrift*, was held at Interlaken in September. Attendance was even greater than at the previous congresses; about 400 delegates were present. This congress too was officially sponsored by the federal government of Switzerland. Federal Councillor Dr. Etter, minister of public instruction, delivered the inaugural address. The management of the congress as in other years was in the hands of Prof. Alfred Gigon of Basel.

The first scientific lecture was delivered by Nobel prize winner Prof. Hans Spemann of Germany; his topic, "New Insight Into the Processes of Animal Embryology." A systematic causal analysis of the embryonal development of the Amphibia yields several data of fundamental significance which in their further implications may be related to important medical problems. The individual components of germinal cells in the Amphibia are not at first definitely conditioned to their later destiny; environmental influences select from out the rich

storehouse of organ-producing effects those which correspond to the locale. The germ cell is permeated with "fields of determination," which are retained, perhaps permanently. Normally they do not become perceptible because the exposed tissue is no longer capable of reaction to their influence. On the other hand, they are immediately demonstrable if one brings under this influence the embryonal tissue with its rich generative powers. These observations are of fundamental interest for medicine and perhaps also for research on tumors. The second speaker was Prof. Arthur Stoll of Basel on "Recent Developments in the Chemistry of Digitalis Glucosides." Stoll has been an important contributor to our knowledge of the chemistry of substances containing digitalis, especially through his isolation of glucosides from both squill and Digitalis lanata. Recently Stoll has succeeded in isolating in crystalline form a genuine glucoside, the seed of Strophanthus Kombé (K-strophanthoside). This new glucoside decomposes under hydrolysis with acids into strophanthidine and strophanthrotriose, which consists of cymarose and two molecules of dextrose. A third paper, on tularemia, was submitted by Prof. K. F. Meyer of San Francisco. The speaker provided an impressive description of his investigations of this disease among the wild rodents of California; his talk was illustrated by extremely interesting motion pictures. The Faculty of Medicine of Zurich University took this occasion to confer on Professor Meyer in recognition of his scientific achievement the honorary degree of Doctor of Medicine.

"Brain and Nerves" was the second day's topic. Veraguth of Zurich first provided a historical account entitled "Fifty Years of Surgery of the Spinal Cord." His point of departure was the pioneer operation for a tumor on the spinal cord performed by the English surgeon Horsley in 1887. The speaker referred in particular to the advances which have been achieved since that time in surgical procedure and in early diagnosis. Hugh Cairns of London then spoke on "Results Reported in the Treatment of Intracranial Tumors." He discussed the results of surgical treatment and enumerated the factors that have contributed to a lowered operative mortality and an improvement in late secondary results. The seat of the tumor is an extremely important prognostic factor, as Cairns illustrated with reference to different cerebral regions. Tumors situated in vital portions of the brain are not amenable to direct surgical intervention. Many such tumors, however, can be successfully treated by conservative surgery and by irradiation. A clearer concept of the limitations of the surgical approach to cerebral tumors that lie in the more vital portions will in future conduce to better neurosurgical results. Clovis Vincent of Paris next discussed the therapy of the subacute and the chronic brain abscess. A fourth paper was read by Herbert Olivecrona of Stockholm on surgical treatment of Ménière's disease.

The first speaker of the afternoon session was Nobel prize winner Otto Loewi of Graz, his theme being "The Chemical Transmission of Nervous Action." Loewi has previously demonstrated that the efficacy of a stimulus of the cardiac nerves comes about through liberation of certain substances at the nerve termination, which in its turn elicits nervous stimulus. Lately he has found that this phenomenon applies both to the sympathetic nerves and to the spinal nerves. The substances liberated are acetylcholine and epinephrine. It could be observed that the liberation of substances takes place at the nerve termination itself in the following manner: The nervous stimulus releases the substances from restraint, whereupon they become diffusible and therewith effective. The liberated substances have their point of attack directly on the reactive organ. These more recent observations of Loewi represent a new notable landmark in the progress of his work. Laruelle, director of the Centre Neurologique, Brussels, then spoke on the physiopathology of asthenia. He distinguished the central, peripheral and muscular types of asthenia. On this differentiation he bases his therapeutic principles. The final speaker of the day was Iselin of Basel, who discussed rheumatism and the sympathicus. He attempted an explanatory outline of the whole problem of rheumatism.

The third day was dedicated to "General Problems." The first lecturer, the Basel gynecologist Labhardt, discussed the interrelation of obstetrics and the problems of population. He cited statistical records of the Woman's Hospital, Basel, which go back seventy years and more and which illustrate the strong influence of obstetrics on the census figures. In this connection he touched on the problem of birth control. Robert Rössle, pathologic anatomist of Berlin, then spoke on the familial behavior of tuberculosis and syphilis. Necropsy records of married couples and blood relations were systematically assembled and collated with respect to the problem of familial behavior of the two most important diseases of the people. Among the pertinent considerations is that of special organotropic strains of the causative organisms and of organic predispositions to attack. With respect to syphilitic married couples, the observation that the death of one spouse was usually followed after no great interval by that of the other led to the presumption of a similarity of agent. The high incidence of congenital syphilis among siblings was regarded in the same light. Yet, apart from rare exceptional instances, no evidence of an identity in the disease was manifested among marriage partners or in congenital syphilis as observed among siblings. On the whole, familial syphilis presents the same variegated and chequered picture as extrafamilial syphilis. With respect to tuberculosis, the necropsy reports on 162 married couples were compared; in these cases one or both of the spouses were tuberculous. The important datum was established that in fifty-nine cases of fatal tuberculosis in one partner the other partner did not succumb to the disease. This fact and instances of specially marked resistance among blood relatives indicate the possibility of a higher immunity against tuberculosis among human beings. Repetition in families of similarly located tuberculosis is rare (207 families were studied). An identity of pulmonary tuberculosis among siblings or among parents and children on the basis of Turban's classification is rejected by the author. A critical attitude was assumed toward the question of specific hereditary predispositions and a warning was sounded against overevaluation of hereditary-constitutional factors.

Wilhelm Falta of Vienna next lectured on the pathology of the thyroid. He pointed out among other things that diiodotyrosine (3.5 diiodo-4-oxyphenylalanine) exerts only a thyroxine-like effect in myxedema if administered intramuscularly or intravenously in massive doses; in exophthalmic goiter, on the contrary, large doses of the same substances act like compound solution of iodine in that they restore to the thyroid the capability of the latter for storage of colloid and effective substance, a function temporarily inhibited by this disorder. Falta discussed the toxic effects of thyroid hormone, which may be present in the diencephalon and on account of which stronger doses of diencephalic narcotics exert favorable influences in exophthalmic goiter. Rudolf Nissen of Istanbul described his work in cardiac surgery with reference to heart wounds, valvular lesions (results extremely unfavorable), massive pulmonary emboli (operative treatment of this condition is so perilous that it should be resorted to only as a last resort), coronary sclerosis and the sequels of pericarditis. The clinical results of total thyroidectomy in cases of badly decompensated valvular lesions are good, although to be sure myxedematous manifestations may follow. K. F. Meyer of San Francisco then exhibited his excellent motion pictures on psittacosis and this ended the day's program.

The fourth day's sessions were held at the clinics of the medical school in Berne. Emil Bürgi, pharmacologist, spoke first on the action of vegetable coloring matter on injured and

diseased skin. In artificially produced lesions, chlorophyll shows itself superior to all other types of vegetable coloring matter. Observations of patients with disease of the skin at the Berne Dermatologic Clinic have in general confirmed the earlier data.

The theme on the fifth day was "Carbohydrate Metabolism." Leopold Lichtwitz of New York discussed disturbances in the regulation of carbohydrate metabolism. The latter depends not only on the amount of the insulin secretion but also on the sensitivity to insulin of the organs affected. The insulin value is, however, not constant but is rendered variable by a group of factors and above all by the influence of the hypophysial-diencephalic complex. The speaker cited several disorders in which the foregoing phenomena may be observed: acromegaly, Simmond's disease, mesencephalitis, chronic arthritis and renal diabetes. He further discussed disorders of the sympathetic nervous regulation. Finally he considered the significance of blood sugar regulation in migraine and lipoid nephroses and cited certain data with regard to spontaneous hypoglycemia. H. C. Hagedorn provided a most impressive summary of his research on protamine insulin, with especial reference to his most recent studies. Last of all, Georges Bickel of Geneva discussed spontaneous hypoglycemia, a problem with which he has been particularly concerned.

On the final day of the congress, Hans von Meyenburg of Zurich lectured on chondrogenic skeletal diseases. He has made a special study of the cartilaginous tissue. His talk dealt principally with disorders in which a primary disease of the cartilage elicits reactions in certain portions of the osseous skeleton.

BUDAPEST

(From Our Regular Correspondent)

Oct. 6, 1937.

The Annual Medical Week

Prof. Baron Alexander Korányi read a paper at the Annual Medical Week on the role of the circulatory system in growing old. According to statistics of the Metropolitan Life Insurance Company, hypertension as a cause of death is four times as frequent as cancer. Krehl in the first edition of his "Pathologische Physiologie" shows clearly how the vasomotor regulation of the blood stream spares the heart, lest the locally and transiently increased demand shall encumber that organ. According to Thoma, the average weight of the heart increases from 316 to 331.8 Gm. between the ages of 50 and 70 years. According to Müller, the heart reaches the maximum weight, in proportion to the body weight, in women between 60 and 70 and in men between 70 and 80. The investigations of Müller on the hearts of old people showed that the weight of the musculature of the auricle in comparison with that of the ventricle continues steadily to increase from the thirtieth year of life.

CORONARY THROMBOSIS AND TRANSITIONAL GLYCOSURIA

At the same meeting, Dr. Lajos Horvay reviewed literature showing that some observers frequently found spontaneous glycosuria present in the acute stage of coronary thrombosis in nondiabetic patients. He reported fourteen cases of coronary thrombosis in nondiabetic patients in whom transition—one day—glycosuria occurred in only one case. He had occasion to observe this case for seven years, during which time the patient returned every six months with clocklike punctuality for control examinations, which proved that he was not diabetic. In spite of this, Horvay maintains the possibility that such glycosuria eventually may prove to be the manifestation of hidden diabetes. The etiology of this condition is not clear. Is it due to some functional or organic fault? Is it brought about by some transitory functional disturbance of the pancreas? Glycosuria occurs in only about 4 to 5 per cent of the cases of coronary thrombosis.

AMAUROSIS AFTER PROLONGED USE OF QUINIDINE

Dr. Braumüller reported a case in which a man, aged 54, suffered from frequent extrasystoles, which, however, occurred only in the daytime. The irregularity of the heart became so unbearable that once the patient attempted suicide. After taking fairly large doses of quinidine for several years he noticed impairment of his eyesight. An ophthalmologist found he was suffering from incipient amaurosis. The patient died of an intercurrent pleurisy. Braumüller said that amaurosis after large doses of quinidine may impair the vision and that no large doses should be prescribed. In such cases the amaurosis may be due to spasms of the blood vessels, or be the result of a direct action on the ganglion cells of the retina. To prevent the amaurosis, Strebel of Switzerland counteracts the vasodilating action of quinidine preparations by using as a vehicle for them light brandy or whisky, tea or coffee, which have a dilating effect on the cerebral vessels.

WORK FOR CARDIAC PATIENTS

Dr. Hasenfeld said that one of the important questions that have to be settled in the treatment of a patient with cardiac disease is the amount of work which he is able to perform. It is the opinion of cardiologists that patients with compensated rheumatic heart disease are capable of more work than patients with similar degrees of cardiac syphilis or cardiosclerosis, because the former is a stationary lesion or at all events a less progressive lesion than the latter two. Hasenfeld considered various occupations, and he concluded that no one kind of work can be recommended indiscriminately to cardiac patients but that each case must be gone into carefully in detail. In his opinion, aortic regurgitation is compatible with good exercise tolerance (the cases he mentioned being rheumatic and not syphilitic) and also that in cases of mitral stenosis the exercise tolerance is good. Naturally, in both those types of postrheumatic heart disease the tendency is to a slow downward progress, so that the years of activity are in general shorter by several decades than those of the average healthy man. Yet he mentioned the case of a woman who, acquiring aortic and mitral disease of rheumatic type at 23, led an active and useful life until she died at 54. Hasenfeld urged the adoption of the system used in America, where heart clinics have been established in several large centers wherein the patient's capacity for work is tested. After this a suitable employment is, if possible, found for the patient. The value of such an organization is enormous. The patient is all the better for the work, and so is the state, which gets a certain production from the man in exchange for supporting him.

Marriages

ADLAI EWING STEPHENSON LILLY, Richmond, Va., to Mrs. Sarah Bugg Gholson, in Henderson, N. C., October 23.

FRANCIS MARION DANIELS JR. to Miss Frances Louise Schaefer, both of Greenville, S. C., October 30.

HENRY ALFRED BARRETT, New York, to Miss Ruth Silsby Maryott of Pawtucket, R. I., in October.

EDWARD SPENCER COWLES, New York, to Miss Lorraine Posey of Henderson, Ky., November 11.

MAURICE L. HORWITZ, Oakland, Calif., to Miss Georgiana Lewis of San Francisco, October 24.

GORDON TAYLOR BURNS, Chicago, to Miss Mildred Birmingham of Berywn, Ill., October 9.

JAMES H. HOLLIMON, Houston, Texas, to Miss Lora Sherman of Picayune, Miss., October 6.

CHARLES LOUIS GILBERT to Miss Minnie Fox Hopkins, both of New York, October 23.

EVAN MANSFIELD BARTON to Miss Jane Purvis High, both of Chicago, October 16.

GLEN I. ALLEN to Miss Dona Luke, both of Peoria, Ill., September 25.

Deaths

William Lincoln Noble ⊕ Chicago; Rush Medical College, Chicago, 1888; member of the House of Delegates of the American Medical Association, in 1912, 1914 and 1915; an Affiliate Fellow of the American Medical Association; formerly member, advisory commission, Illinois Department of Registration and Education; past president of the Illinois State Medical Society and the Chicago Ophthalmological Society; at one time chief of staff of the Illinois Charitable Eye and Ear Infirmary, and superintendent of the Chicago State Hospital; on the staff of the West Side Hospital; past president and formerly member of the board of trustees of the University of Illinois; aged 76; died, October 14, at his home in Evanston, Ill., of bronchopneumonia.

Louis Gross, New York; McGill University Faculty of Medicine, Montreal, Que., Canada, 1916; member of the American Association of Pathologists and Bacteriologists and the American Society for Experimental Pathology; director of laboratories of the Mount Sinai Hospital; in 1937 was awarded the bronze medal by the American Medical Association for an exhibit illustrating experimental studies on the blood supply to the heart in relation to coronary occlusion; aged 42; was killed, October 17, in an airplane accident.

Henry Herbert Yerington, Palo Alto, Calif.; Columbia University College of Physicians and Surgeons, New York, 1908; at one time associate clinical professor of pediatrics, Stanford University School of Medicine, San Francisco; instructor in pediatrics at the Cooper Medical College, 1910-1911; formerly visiting pediatrician to the San Francisco Hospital and assistant on the visiting staff of the Children's Hospital, San Francisco; aged 57; died, August 30, in a sanatorium at San Jose.

Nathan Winslow ⊕ Baltimore; University of Maryland School of Medicine, Baltimore, 1901; professor of clinical surgery at his alma mater; member of the Southern Surgical Association; fellow of the American College of Surgeons; served during the World War; on the staffs of the University Hospital, Franklin Square Hospital and the West Baltimore General Hospital; aged 58; died, October 7, in St. Luke's Hospital, Richmond, Va., of injuries received in an automobile accident.

Arthur Betts ⊕ Spokane, Wash.; University of Illinois College of Medicine, Chicago, 1915; fellow the American College of Physicians; member of the American Roentgen Ray Society and the Radiological Society of North America; served during the World War; president-elect of the Washington State Medical Association; on the staffs of the Deaconess and St. Luke's hospitals; aged 45; died suddenly, October 17.

Elmer Burt Coolley ⊕ Danville, Ill.; Rush Medical College, Chicago, 1889; past president of the Illinois State Medical Society and the Vermilion County Medical Society; in 1918 member of the House of Delegates of the American Medical Association; for many years president of the Illinois Tuberculosis Association; aged 70; on the staff of the Lake View Hospital, where he died, October 12.

Jonas Curtis Lyter ⊕ St. Louis; St. Louis University School of Medicine, 1907; member of the House of Delegates of the American Medical Association in 1922, 1924 and 1925; fellow the American College of Physicians; formerly assistant professor of medicine at his alma mater; on the staff of St. Anthony's Hospital; aged 54; died, October 9, of heart disease.

Frank J. Schleier ⊕ Omaha; John A. Creighton Medical College, Omaha, 1904; associate professor of surgery at his alma mater; formerly county physician and city fire department surgeon; for many years on the staff of St. Joseph's Hospital; aged 61; died, September 11, of coronary thrombosis, arteriosclerosis and diabetes mellitus.

Robert William Bainbridge Mayo ⊕ Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1908; formerly instructor in clinical medicine at his alma mater; served during the World War; medical director of the Home for Incurables; aged 53; died, October 21, in the Union Memorial Hospital, of esophageal constriction.

Clinton Anthony Benzie, Chicago; University of Illinois College of Medicine, Chicago, 1927; member of the Illinois State Medical Society; a physician for the child welfare bureau, city board of health; on the staff of St. Margaret's Hospital, Hammond, Ind.; aged 40; was killed, September 8, when he was struck by an automobile.

Francis William O'Connor, New York; M.R.C.S., England and L.R.C.P., London, 1907; associate professor of medicine, Columbia University College of Physicians and Surgeons; associate attending physician to the Presbyterian Hospital; aged 53; died, October 3, following an operation for intestinal obstruction.

Charles Wesley Worthen, White River Junction, Vt.; University of Vermont College of Medicine, Burlington, 1893; Hahnemann Medical College and Hospital, Chicago, 1894; aged 68; died, August 23, in the Mary Hitchcock Memorial Hospital, Hanover, N. H., following an operation for appendicitis.

Alexander Odell Snowden, Peekskill, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1877; member of the Medical Society of the State of New York; on the staff of the Peekskill Hospital; aged 83; died, September 20, of coronary thrombosis.

Richard Bartlett Oleson ⊕ Lombard, Ill.; Northwestern University Medical School, Chicago, 1893; fellow of the American College of Physicians; formerly county coroner; aged 67; died, August 6, at the Johns Hopkins Hospital, Baltimore, of benign prostatic hypertrophy and staphylococcic septicemia.

Overton Hobart Swango, Jackson, Ky.; Kentucky School of Medicine, Louisville, 1903; member of the Kentucky State Medical Association; served during the World War; aged 64; died, August 14, in the Veterans Administration Facility, Lexington, of arteriosclerotic heart disease.

Erwin Golly MacFarland ⊕ Utica, N. Y.; Baltimore Medical College, 1908; member of the American Urological Association; served during the World War; aged 52; on the staff of the Faxton Hospital, where he died, September 9, of mitral stenosis and myocarditis.

Arthur Boyd Blinn, Loomis, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1929; member of the Medical Society of the State of New York; on the staff of the Loomis Sanatorium; aged 33; died, August 30, of chronic pulmonary tuberculosis.

Theodore P. Livingston, Plattsmouth, Neb.; Omaha Medical College, 1888; in 1909 a member of the House of Delegates of the American Medical Association; aged 73; died, September 7, in the Immanuel Hospital, Omaha, of coronary sclerosis and bronchopneumonia.

Leon Edward Whetsell, Bloomington, Ind.; Louisville (Ky.) Medical College, 1903; served during the World War; member of the police board; aged 57; died, August 25, in the Methodist Hospital, Indianapolis, of coronary occlusion and arteriosclerosis.

Frederick William Delmage, Hermon, N. Y.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1897; member of the Medical Society of the State of New York; aged 66; died, August 16, of chronic nephritis and cerebral hemorrhage.

William Charles Hands, Washingtonville, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1882; aged 79; died, September 8, of hypertrophic cirrhosis of the liver and chronic myocarditis.

William Elry Caldwell ⊕ Suffield, Conn.; Baltimore Medical College, 1894; for many years served as a member of the town school committee; health officer; aged 67; on the staff of the Springfield (Mass.) Hospital, where he died, August 18.

Frank Blinn Dorsey ⊕ Keokuk, Iowa; College of Physicians and Surgeons, Keokuk, 1881; for many years on the staffs of the Graham Protestant Hospital and St. Joseph's Hospital; aged 79; died, September 8, of chronic hepatitis.

Thomas S. Davis, Plainfield, N. J.; Hahnemann Medical College of Philadelphia, 1884; for many years on the staff of the Muhlenberg Hospital; aged 84; died, September 12, of cerebral embolism, chronic prostatitis and duodenal ulcer.

William Jacob Shenberger, Windsor, Pa.; Jefferson Medical College of Philadelphia, 1904; member of the Medical Society of the State of Pennsylvania; aged 61; died, August 26, of cerebral hemorrhage and carcinoma of the esophagus.

William S. Bentley, Sioux Falls, S. D.; Hahnemann Medical College and Hospital, Chicago, 1893; member of the South Dakota State Medical Association; on the staff of the Veterans Administration; aged 66; died, August 29.

Carl McLain Vermillion ⊕ Pratt, Kan.; Tulane University of Louisiana School of Medicine, New Orleans, 1925; formerly county health officer; on the staff of the Ninnescah Hospital; aged 40; died, August 12, of nephritis.

Everett Elmer Speaker ⊕ Lake View, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City.

1897; formerly member of the state conservation commission; aged 60; died, August 30, of coronary sclerosis.

Vernon Stevens Wilkinson, Cardiff, Md.; University of Maryland School of Medicine, Baltimore, 1914; served during the World War; aged 48; died, August 30, in Atlantic City, N. J., of aortic stenosis and mitral insufficiency.

Elmer Dwight Strong ⊕ El Paso, Texas; Hahnemann Medical College and Hospital, Chicago, 1901; aged 63; died, August 31, in the William Beaumont General Hospital, of nephritis, pulmonary tuberculosis and uremia.

William Spencer Ryan, Chicago; Rush Medical College, Chicago, 1895; also a dentist; served during the World War; aged 68; died, October 23, in the Veterans Administration Facility, Hines, Ill., of cerebral hemorrhage.

Charles St. V. Zimmerman, Asheville, N. C.; National University Medical Department, Washington, D. C., 1895; aged 68; died, August 17, of coronary thrombosis and colon bacillus infection of the urinary tract.

Elijah Sherman Lake ⊕ Chicago; Loyola University School of Medicine, Chicago, 1921; aged 50; on the staff of the Peoples Hospital, where he died, August 22, of chronic myocarditis and hypertension.

William C. Stirling, Sulphur Springs, Texas; Atlanta Medical College, 1884; past president and secretary of the Hopkins County Medical Society; aged 82; died, August 14, of cerebral hemorrhage.

Solon W. Merrill, Flushing, N. Y.; College of Physicians and Surgeons, Baltimore, 1907; aged 56; died, September 15, at his home in Huntington, of hypertrophy of the prostate and pulmonary embolism.

Helen West, Meriden, Conn.; Boston University School of Medicine, 1896; member of the Connecticut State Medical Society; aged 69; died, August 22, of cerebral hemorrhage and lobar pneumonia.

August F. G. E. Oberbeck, New York; New York Homeopathic Medical College and Hospital, 1905; aged 69; was found dead, August 27, of coronary sclerosis and chronic myocarditis.

Henry Hobert Bradley, Attica, N. Y.; Albany (N. Y.) Medical College, 1892; veteran of the Spanish-American War; aged 67; died, September 19, of chronic myocarditis and bronchitis.

Walter Holmes Oliver, Monroe, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1909; aged 53; died, August 19, of chronic nephritis and chronic myocarditis.

Marcus E. Babcock, Bath, N. Y.; University of Buffalo School of Medicine, 1884; aged 80; died, September 2, of chronic arteriosclerotic nephritis and chronic osteo-arthritis.

Joseph McDowell Brewer, El Dorado, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1882; member of the Arkansas Medical Society; aged 77; died, August 27.

John Stamm, Toledo, Ohio; Ohio Medical University, Columbus, 1898; member of the Ohio State Medical Association; aged 68; died suddenly, August 13, of heart disease.

Rosella Cynthia Wilder, Buffalo; University of Michigan Homeopathic Medical School, Ann Arbor, 1884; aged 79; died, August 12, of coronary thrombosis and arteriosclerosis.

Charles Lucas Duncan, Beaufort, N. C.; University of Maryland School of Medicine, Baltimore, 1902; aged 65; died, September 4, of arteriosclerosis and partial hemiplegia.

George Morton Sturgell, Fort Gay, W. Va.; Kentucky School of Medicine, Louisville, 1908; aged 54; died, August 22, in the Veterans Administration Facility, Huntington.

David Alphonsus De Vanny, Long Beach, N. Y.; University of Maryland School of Medicine, Baltimore, 1905; aged 55; died, September 3, of pulmonary tuberculosis.

Bertrand Hiram Hopkins, Ayer, Mass.; Tufts College Medical School, Boston, 1897; member of the Massachusetts Medical Society; aged 64; died, August 13.

Edward Samuel Silvera Jr., Orange, N. J.; Howard University College of Medicine, Washington, D. C.; 1932; aged 31; died, August 14, of pulmonary tuberculosis.

Francis M. Davis, Tooele, Utah; Medical College of Indiana, Indianapolis, 1883; formerly mayor, and city and county physician; aged 77; died, in August.

Charles Harmon Bresee, Owego, N. Y.; Hahnemann Medical College and Hospital, Chicago, 1891; aged 71; died, September 13, of chronic myocarditis.

Samuel Everett Jones, Indianapolis; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; aged 62; died, August 29.

Frank Mathias Cochems ⊕ Chicago; Rush Medical College, Chicago, 1928; aged 35; died, August 1, in Mundelein, Ill., of acute coronary thrombosis.

Richard Turnbull Kidd, Atwood, Ont., Canada; University of Western Ontario Medical School, London, 1931; aged 32; was drowned, August 15.

John F. Lacewell, Dalton, Ga.; Atlanta Medical College, 1886; member of the Medical Association of Georgia; aged 80; died, August 19.

Edwin Horace Miller, Oakland, Calif.; University of Pennsylvania Department of Medicine, Philadelphia, 1888; aged 77; died, August 22.

Edwin Peppers Hawley, Claremont, Calif.; Western Reserve University Medical Department, Cleveland, 1884; aged 81; died, August 4.

John Walter Williams, Minneapolis; Minneapolis College of Physicians and Surgeons, 1907; aged 52; died, August 22, of heart disease.

Denis J. H. Berthiaume, Montreal, Que., Canada; Victoria University Medical Department, Coburg, Ont., 1890; aged 69; died, August 24.

Mary Englebert Teague, Los Angeles; Northwestern University Woman's Medical School, Chicago, 1895; aged 77; died, August 17.

Fred Raymond Funk, Dresden, Kan.; Ensworth Medical College, St. Joseph, Mo., 1906; aged 61; died, August 25, of heart disease.

Oren V. Hembree, Greenfield, Mo.; Louisville (Ky.) Medical College, 1895; aged 82; died, August 24, of cerebral hemorrhage.

Thomas C. Thompson, Jacksonville, Fla.; Kentucky University Medical Department, Louisville, 1903; aged 59; died, August 31.

Anna May Allen Small, Oakland, Calif.; Hahnemann Medical College and Hospital, Chicago, 1897; aged 66; died, August 29.

Roy John Farmer, Toronto, Ont., Canada; Western University Faculty of Medicine, London, 1916; aged 50; died, August 25.

Fred S. Greenwood, St. Catharines, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1878; died, August 4.

Thomas Jefferson Jackson, Liberty, Tenn.; Vanderbilt University School of Medicine, Nashville, 1884; aged 77; died, August 5.

Henry William Weimar, Vicksburg, Miss.; Memphis (Tenn.) Hospital Medical College, 1901; aged 59; died, August 9.

Wilber Franklin Brown, St. Mary's, Ont., Canada; University of Toronto Faculty of Medicine, 1893; died, August 14.

Judson Waldo Paul, Santa Clara, Calif.; Bellevue Hospital Medical College, New York, 1891; aged 76; died, August 6.

Robert John McNeill, Tignall, Ga.; University of Georgia Medical Department, Augusta, 1902; aged 62; died, August 17.

Henry Lee Stevens, Laramie, Wyo.; Long Island College Hospital, Brooklyn, 1878; aged 85; died, August 12, of senility.

James Freeborn McKee, Thornbury, Ont., Canada; University of Toronto Faculty of Medicine, 1906; died, August 26.

Sheffield Smith, North Providence, R. I.; Harvard University Medical School, Boston, 1877; aged 83; died, August 15.

Herbert Leslie Barber, Noelville, Ont., Canada; Trinity Medical College, Toronto, 1892; aged 70; died, August 21.

George Knox Osborn, Covelo, Calif.; California Medical College, San Francisco, 1895; aged 73; died, August 8.

Nelson Ford Sutton, Norwood, Ont., Canada; University of Toronto Faculty of Medicine, 1903; died, August 21.

Samuel Flowers Parker, Pink Hill, N.C.; Medical College of Virginia, Richmond, 1901; aged 67; died, August 15.

Homer R. Houchen, Utica, Neb.; Lincoln Medical College of Cotner University, 1905; aged 56; died, August 12.

Charles E. Longacre, Lindsborg, Kan.; Kansas City (Mo.) Medical College, 1898; aged 63; died, August 31.

Albert Angelo Pastene, Boston; Tufts College Medical School, Boston, 1901; aged 62; died, August 28.

Jephtha Silas Boyer, Davis, Calif.; Rush Medical College, Chicago, 1893; aged 73; died, August 17.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Pfeiffer's Hamburg Tea.—Fort Wayne Drug Co., Fort Wayne, Ind. Composition: Essentially plant drugs, principally senna, with small proportions of fennel and anise seed. Represented as "An Unfailing Preventive of Influenza." Fraudulent therapeutic claims.—[*N. J. 25054; July 1936.*]

Golden Chemical Compound.—International Chemical Co., Topeka, Kan. Composition: A dark, reddish-brown, watery solution, consisting of iron salts (ferric and ferrous sulfate). For diphtheritic and scarlet fever sore throat, pyorrhea, erysipelas, eczema, female disorders, etc. Not "the most powerful germicide known." Fraudulent therapeutic claims.—[*N. J. 25061; July 1936*]

Pinkham's Tablets.—Lydia E. Pinkham Medicine Co., Lynn, Mass. Composition: In each tablet 1½ grains of sodium monobenzylsuccinate and 2 grains of an extract of a plant drug, such as viburnum. For menstrual disorders. Fraudulent therapeutic claims.—[*N. J. 25062, July 1936; and N. J. 25837, January 1937.*]

Hildebrand's Gall Stone Capsules.—Frank Granzow Mfg. Chemists, Chicago. Composition: Essentially phenolphthalein, oleic acid, soap, menthol, sodium salicylate and plant fiber. For gallstones, gallbladder and stomach disorders, etc. Fraudulent therapeutic claims.—[*N. J. 25066; July 1936.*]

Granzow's Tonic Tablets.—Frank Granzow Mfg. Chemists, Chicago. (Supplementing Hildebrand's Gallstone Capsules.) Composition: Essentially sodium sulfate, an iron compound, and a small proportion of strychnine, coated with lime carbonate and sugar. For debility, nervousness, sleeplessness, etc. Fraudulent therapeutic claims.—[*N. J. 25066; July 1936.*]

Kurlene Eyelash Grower.—Kurlash Co., Rochester, N. Y. Composition: Essentially mercuric oxide, salicylic acid and petrolatum, with a small amount of vanillin. For granulated lids, as well as for growing eyelashes. Fraudulent therapeutic claims.—[*N. J. 25067; July 1936.*]

Prescription No. 69.—Home Drug Co., Minneapolis. Composition: Essentially glycerin, with small amounts of oxgall and bile acids. For gallbladder trouble, gallstones and liver disorders. Fraudulent therapeutic claims.—[*N. J. 25070; July 1936.*]

Antiseptic Capsules.—DeVore Mfg. Co., Columbus, Ohio. Composition: Essentially common salt, borax, baking soda, salicylic acid, volatile oils including cinnamon, thymol and menthol, with red coloring matter. For tonsillitis, laryngitis, ulcerated throat and mouth, etc. Not antiseptic. Fraudulent therapeutic claims.—[*N. J. 25077; July 1936.*]

Special Treatment for Diabetis [sic].—DeVore Mfg. Co., Columbus, Ohio. Composition: Essentially Rochelle salt and water, flavored with cinnamon oil. Fraudulent therapeutic claims.—[*N. J. 25077; July 1936.*]

Gold Seal Vegetable Compound for Women.—DeVore Mfg. Co., Columbus, Ohio. Composition: Essentially extracts of plant drugs including berberis and laxatives, with a benzoate, a salicylate, saccharin, phosphoric acid, alcohol (14 per cent by volume), and water. For female disorders. Fraudulent therapeutic claims.—[*N. J. 25077; July 1936.*]

Dovola Carbolic Salve.—John J. Smith, trading as Dovola Co., Chicago. Composition: Carbolic acid (2 per cent) in an ointment base. For sores, ulcers, itch, etc. Fraudulent therapeutic claims.—[*N. J. 25078; July 1936.*]

Dovola Ointment Zinc Oxide.—John J. Smith, trading as Dovola Co., Chicago. Composition: Zinc oxide (not more than 17½ per cent). For inflammations such as eczema. Fraudulent therapeutic claims.—[*N. J. 25078; July 1936.*]

Dovola Throat Gargle.—John J. Smith, trading as Dovola Co., Chicago. Composition: Small proportions of ferric chloride and potassium chlorate in a mixture of water and glycerin. Fraudulently represented as an effective treatment for sore throat.—[*N. J. 25078; July 1936.*]

Dovola Wild Cherry Expectorant.—John J. Smith, trading as Dovola Co., Chicago. Composition: Essentially extracts of plant drugs, glycerin, sugar and water. For coughs, croup, bronchitis, etc. Fraudulent therapeutic claims.—[*N. J. 25078; July 1936.*]

Dovola Vegetable Laxative Tablets.—John J. Smith, trading as Dovola Co., Chicago. Composition: Extracts of plant drugs including nux vomica. Fraudulent therapeutic claims.—[*N. J. 25078; July 1936.*]

Dovola Special Tonic Pills.—John J. Smith, trading as Dovola Co., Chicago. Composition: A phosphide was found. For purifying the blood and restoring "shattered nerve forces." Fraudulent therapeutic claims.—[*N. J. 25078; July 1936.*]

Dovola Eczema Ointment.—John J. Smith, trading as Dovola Co., Chicago. Composition: A yellow semi-solid containing bismuth subcarbonate, zinc oxide and sulfur, in an ointment base. Fraudulent therapeutic claims.—[*N. J. 25078; July 1936.*]

Dovola Special Pills.—John J. Smith, trading as Dovola Co., Chicago. Composition: Extracts of plant drugs and saltpeter. For Bright's disease, diabetes, gallstones, leukorrhea, gleet, etc. Fraudulent therapeutic claims.—[*N. J. 25078; July 1936.*]

Dovola Creol.—John J. Smith, trading as Dovola Co., Chicago. Composition: Water, soap, phenols, glycerin and a small amount of neutral oils. "Skin cure." Fraudulent therapeutic claims.—[*N. J. 25078; July 1936.*]

Shavegrass Cut.—Regina Rieppel, trading as Miss R. Regina, New York. Composition: Cut equisetum (horsetail). For kidney and bladder disorders, ulcers, cancer, etc. Fraudulent therapeutic claims.—[*N. J. 25079; July 1936.*]

Healcidine Health Salts.—John J. Smith, trading as Dovola Co., Chicago. Composition: Essentially baking soda (28.5 per cent), epsom salt (21.3 per cent), cream of tartar (22.4 per cent), tartaric acid (17.9 per cent), sodium phosphate (8.8 per cent), and starch (1.4 per cent). For biliousness, boils, pimples, rheumatism, etc. Fraudulent therapeutic claims.—[*N. J. 25078; July 1936.*]

LaClyde Lemon Vegetable Soap.—Clyde Collins Chemical Co., Memphis, Tenn. Composition: Chiefly sodium soap and a fluorescent dye. For pimples and other skin disorders. Not antiseptic. Fraudulent therapeutic claims.—[*N. J. 25082; July 1936.*]

Ru-Co Female Tonic.—Clyde Collins Chemical Co., Memphis, Tenn. Composition: Essentially water, alcohol, sugars, plant extractives (bearing valerianic acid), and a small amount of iron and benzoic acid. Fraudulent therapeutic claims.—[*N. J. 25082; July 1936.*]

Hygeen Tablets.—John B. Petrie, trading as the B X Laboratories and the Purity Products Co., Chicago. Composition: Baking soda, tartaric acid, and small amounts of silica, starch and an organic chlorinated product such as chloramine-T. Fraudulently represented as a vaginal germicide.—[*N. J. 25093; July 1936.*]

Cholax Brand Pulvis Effervescens Salts Phosphatis Comp. (Kelvan).—George T., G. Duke and Mary W. Lambert, trading as Crescent-Kelvan Co., Philadelphia. Composition: Granular material consisting of sodium phosphate, anhydrous (15.8 per cent); sodium sulfate, anhydrous (19.6 per cent); epsom salt, anhydrous (10.6 per cent), and an effervescent base of baking soda, citric and tartaric acids. Fraudulently represented as a remedy for rheumatism and stomach, liver and kidney disorders.—[*N. J. 25094; July 1936.*]

Ru-Co Wonderful Health Laxative.—Clyde Collins Chemical Co., Memphis, Tenn. Composition: Chiefly dehydrated Glauber's and epsom salts. For sallow skin, pimples, blotches, "abnormal weight," etc. Fraudulent therapeutic claims.—[*N. J. 25082; July 1936.*]

B X Special Multi-Strength Treatment.—John B. Petrie, trading as the B X Laboratories and the Purity Products Co., Chicago. Composition: A brown liquid containing chiefly apiol and a small amount of ergot. For menstrual disorders. Fraudulent therapeutic claims.—[*N. J. 25093; July 1936.*]

B X Monthly Relief Compound.—John B. Petrie, trading as the B X Laboratories and the Purity Products Co., Chicago. Composition: Pills chiefly containing iron sulfate, aloe, ergot and a terebinthinate oil resembling oil of savin. For female disorders. Fraudulent therapeutic claims.—[*N. J. 25093; July 1936.*]

B X Menstrua.—John B. Petrie, trading as the B X Laboratories and the Purity Products Co., Chicago. Composition: Capsules and tablets, the first containing apiol and a small amount of savin oil, and the second containing extracts of plant drugs including a laxative. For female disorders. Fraudulent therapeutic claims.—[*N. J. 25093; July 1936.*]

LaClyde Lucky Bleaching Ointment.—Clyde Collins Chemical Co., Memphis, Tenn. Composition: An ointment containing ammoniated mercury (3 per cent). For pimples, tetter, eczema, etc. Fraudulent therapeutic claims.—[*N. J. 25082; July 1936.*]

Kellogg's (Dr. J. D.) Asthma Remedy.—Northrop & Lyman & Co., Inc., Buffalo, N. Y., and Toronto. Composition: Powdered plant material including stramonium. Fraudulent therapeutic claims.—[*N. J. 25098; July 1936.*]

Frese's Hamburg Tea.—Coffin Redington Co., San Francisco. Composition: Essentially ground plant material including senna, lavender and coriander. For indigestion, dyspepsia, blood and skin ailments due to constipation, etc. Fraudulent therapeutic claims.—[*N. J. 25098; July 1936.*]

Nature's Mineral Food.—Nature's Mineral Food, Inc., and Perry B. Smith, Indianapolis. Composition: Essentially the phosphate, carbonate and chloride of calcium, with epsom salt, common salt, and small amounts of iron sulfate, potassium iodide, sodium salicylate and free sulfur. For blood, stomach and kidney disorders, diabetes, arthritis, high blood pressure, etc. Fraudulent therapeutic claims.—[*N. J. 25091; July 1936.*]

Correspondence

THE SCARLET FEVER PATENTS

To the Editor:—The special article entitled "Medical Patents" published in the November 6 issue of THE JOURNAL implies that the Scarlet Fever Committee has interfered with research through its methods of administering the patent on scarlet fever toxin and scarlet fever antitoxin. In reply to this implication and the author's statement that such effect is probably due to the personnel of the committee, it should be stated that application for a patent was not made until after receipt of the following letter from the director of the National Institute of Health, and after consultation with the Council on Pharmacy and Chemistry of the American Medical Association, which concurred in the advice given in this letter.

TREASURY DEPARTMENT
United States
Public Health Service
Washington, D. C.
November 12, 1924.

Dr. Geo. F. Dick,
% John McCormick Institute for Infectious Diseases,
637 South Wood Street, Chicago, Illinois.

Dear Doctor Dick:—

I am amplifying somewhat my telegram of this date in reply to yours sent from Columbus, Ohio, yesterday.

Some months ago, when the streptococci acquired new interest in relation to scarlet fever, we stated to licensed manufacturers, in response to inquiries, that in our opinion there was no objection to marketing packages of antistreptococcus serum for which license was held in such way that it would indicate that the scarlet fever type of organism had been utilized in the immunization of the animals. It is possible that we were in error in this, but, as I said in my telegram, I believe it would be necessary to have a legal decision to settle this point.

I am sending you a copy of the Biologics regulations, and in the back of the pamphlet you will find the law; there is nothing in the law which actually enables the government to *prevent* the placing of unlicensed preparations on the market; the law however provides adequate penalties for violation and is enforcible through the usual court proceedings, the action, I take it, being brought in the United States court.

The more we have considered the requirements which you feel should be met the more we have been impressed with the difficulties of commercial production; just at present Dr. Dyer and I feel that the best and perhaps the only way to comply completely with your requirements would be for yourselves to take out patents on your preparations, handling the patents in any manner you see fit. This would give you the opportunity to permit the manufacture in any limited number of places in accordance with your own judgment. I take it that there is no difficulty in this from the ethical point of view because, according to our understanding, this is just what was done by the Toronto group of research workers in connection with Insulin.

With kindest regards, I am

Very truly yours,

G. W. McCOY
Director.

After decision to act on Dr. McCoy's suggestion, the Secretary of the Council was asked if the Council would consent to administer the patent. The answer was in the negative. He was then consulted as to the desirability of assigning the patent to a university, to a research institute or to a committee and advised the formation of a committee for the purpose of administering the patent as Dr. McCoy had suggested. When approached on the advisability of granting an exclusive license, as had been done in the case of the insulin patent, he pointed out that while an exclusive license would greatly simplify the problems of administration, it would work undeserved hardship on unlicensed manufacturers and give the possessor of the exclusive license an unearned advantage; that it would also prevent the unlicensed manufacturers acquiring experience in the manufacture of products which they would eventually be expected to furnish.

In accordance with this advice, the Scarlet Fever Committee when organized decided to offer licenses to all reputable commercial manufacturers licensed by the United States Public Health Service on exactly the same terms and to grant free licenses to health departments, although this decision involved the maintenance of a much larger and more expensive organization for testing products from all manufacturers than would have been required for testing the products of one exclusive licensee.

In order to avoid price fixing and still ensure the lowest cost to the public consistent with good quality, the royalty was fixed at 5 per cent instead of the 10 per cent charged by the Insulin Committee. For some time this low fee did not furnish enough income to cover the cost of testing the numerous samples submitted by the various manufacturers. On the other hand, competition and the fact that, by reducing the price of scarlet fever products to physicians, the manufacturers were able to reduce the amount paid to the Scarlet Fever Committee, while the service they received from the committee in testing their products remained the same, resulted in the new scarlet fever materials which were more costly to manufacture selling as cheaply as diphtheria products on which there was no patent.

Any implication to the effect that the Scarlet Fever Committee has interfered with research is wholly unjustified. The fact that the committee has not hampered research should be apparent to any one conversant with recent literature. In no instance has the committee suggested that even poorly conceived research by incompetent investigators be discontinued. Improvements have promptly been adopted. When fallacious results have been published, the committee has been content to meet them by scientific articles calling attention to the fallacies if they seemed of sufficient importance.

An example of the freedom the scarlet Fever Committee has allowed in the field of research is furnished by the fact that the Massachusetts State Health Department, a licensee of the committee, is still distributing for the purpose of statistical research formalized scarlet fever toxin under the name of "scarlet fever toxoid." This is permitted despite publication by two members of the Scarlet Fever Committee in THE JOURNAL (Nov. 3, 1934) of adequate and unrefuted evidence showing that such preparations contain no toxoid, and despite the poor results the material has given in the four year trial.

The Scarlet Fever Committee is heartily in accord with Dr. Fishbein's suggestion that a responsible and unbiased group be formed to administer all medical patents. Such an arrangement would give uniformity in methods of administration, would relieve the discoverers of onerous duties which now interfere with further research they might accomplish, and would be an advantage to manufacturers who at present are obliged to deal with a different group for each patent under which they operate.

THE SCARLET FEVER COMMITTEE.

COMA IN INSULIN-HYPOGLYCEMIC THERAPY OF SCHIZOPHRENIA

To the Editor:—Recent literature discussing the insulin-hypoglycemic therapy of schizophrenia indicates some confusion as to what is understood by the term coma. It is of clinical importance to have some gage as to the onset of coma and its optimum depth. Dorland defines coma as a state of complete loss of consciousness from which the patient cannot be aroused even by the most powerful stimulation. Sakel states (*Am. J. Psychiat.* **94**:111 [July] 1937) that "coma should be associated with the absence of the corneal reflex or at least with presence of a Babinski." Cameron and Hoskins (THE JOURNAL, Oct. 16, 1937, p. 1246) differ. They say "We usually consider somewhat arbitrarily that coma is present when the patient can no longer swallow, when, if he is turned on his side, saliva tends to drool from the mouth, or when, on the eyelids being drawn up, the eyeball is found to be wandering slowly in the orbit." We read in "A Study of Hypoglycaemic Shock Treatment in Schizophrenia" by Isabel G. H. Wilson, M.D., "When the corneal reflexes disappear, the patient is considered to be in coma. Loss of the light reflex of the pupil is usually regarded as an indication for the interruption of shock."

According to our own experience we have found it very difficult to say exactly when the patient was in coma. Many patients who cannot be aroused show persistent corneal and swallowing reflexes and no Babinski. Often when the swallowing reflex was gone and a variable Babinski appeared, the corneal reflex persisted. Again, drooling of saliva and free moving of the eyeball are often found before the appearance of the Babinski or loss of the corneal reflexes. When the complete absence of the corneal reflexes, however, is taken as the criterion, we have found it impossible to produce coma in many patients of the chronic type when large doses of insulin are required.

Disparities in the efficacy of the hypoglycemic treatment may well be due to different interpretations in the meaning of the term coma.

MORRIS W. BRODY, M.D.
MAX HAYMAN, M.D.
Springfield State Hospital,
Sykesville, Md.

SUGGESTIONS FOR THE POSITION FOR COMATOSE INSULIN SHOCK PATIENTS

To the Editor:—The treatment of coma in insulin shock resembles surgical narcosis in several respects, one of them being the danger of aspiration of mucus due to increased secretion of saliva and the absence of pharyngeal reflexes. It is an established fact, known for generations, that aspiration in surgical narcosis is best prevented by placing the patient in a flat position, head turned, so as to permit the saliva to flow out of the mouth.

In view of that fact, it seems strange that the half upright position has been recommended for comatose insulin shock patients in some recent publications (Wilsôn, Isabel G. H.: A Study of Hypoglycaemic Shock Treatment in Schizophrenia, Board of Control, H. M. Stationery Office, 1937. Cameron, D. E., and Hoskins, R. G.: Experiences in the Insulin-Hypoglycemia Treatment of Schizophrenia, THE JOURNAL, October 16, p. 1246) and doubtless in earlier papers from which they are partly compiled.

Seeing no reason to neglect precautions generally accepted in surgery, we have been placing our patients at the Neurological Hospital in a perfectly flat position, head turned, as soon as they go into coma. Our experiences have been quite satisfactory. Therefore, we propose this procedure for general use in insulin shock therapy.

G. WILSE ROBINSON JR., M.D.
HEINRICH LAMM, M.D.
Kansas City, Mo.
From the Neurological Hospital (the Robinson Clinic, Inc.).

LETTERS OF FIELDING H. GARRISON

To the Editor:—The publication of a volume of selected letters of Fielding H. Garrison is being considered. It is felt that such a volume will not only be welcome to the many friends of Garrison but will constitute a real contribution to American literature. It will present to a larger public a brilliant writer who so far has been known only to a limited group consisting mostly of medical men.

Mr. F. L. Tietsch, who was an intimate friend of Garrison, will edit the volume. Mr. Henry Mencken and I are to contribute forewords.

I wish to invite all the many correspondents of Garrison to send their letters to the Institute of the History of Medicine, Johns Hopkins University, 1900 East Monument Street, Baltimore. The letters will be copied in the institute and the originals will be returned to their owners without delay. The copies will be preserved in the institute as material for a future biography.

While Garrison was very reserved in personal contacts, he was exuberant in his letters. His moods and whatever worried him found expression in letters. Letter writting was his way to free himself from oppressing thoughts and he not seldom passed harsh judgments on matters and people. It is needless to say that the editor will proceed very carefully in selecting the letters or passages from letters to be published.

HENRY E. SIGERIST, M.D., Baltimore.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TREATMENT OF THE TABETIC FORM OF DEMENTIA PARALYTICA

To the Editor:—A man, aged 56 years, has the tabetic form of dementia paralytica. Twenty years ago he was treated for tabes by the Swift-Ellis method. He was given six treatments and discharged as improved when he refused to continue. He had no further antisyphilitic treatment until six years ago. At that time he developed acute manifestations of dementia paralytica and was given neoarsphenamine followed by spinal fluid drainage for a period of three months. His spinal fluid showed the typical gold curve of dementia paralytica as well as a positive Wassermann reaction. The blood Wassermann reaction was also positive. He refused further therapy until November 1936, when he came under my care. He had just returned from a fishing trip with 147 turkeys and was negotiating for the purchase of a whale. He complained of lightning pains in his legs and frequent attacks of paroxysmal tachycardia. His family noted personality changes and loss of judgment. Examination revealed Argyll Robertson pupils, absent knee jerks, a positive Romberg sign and extreme nervousness. The blood Wassermann reaction was 4 plus. The spinal fluid Wassermann reaction was 4 plus, and there was a positive Pandy test and a 5555541000 gold curve. The urine was normal and the hemoglobin 90 per cent. I gave him 10 cc. of mixed tertian malaria blood intravenously, which was followed by chills in ten days. Treated at home, he had twenty-seven temperature rises, sixteen of which reached 106 F. for at least four hours each. After the first chill his lightning pains disappeared and have not returned. After six chills auricular fibrillation set in, which was adequately controlled with digitalis. The malaria was interrupted with quinine late in December 1936. The urine was normal, the hemoglobin 40 per cent. Mentally he was worse than ever. January 1, 1 Gm. of tryparsamide was started, increasing to 3 Gm. weekly, with a routine weekly check of the visual fields for the first seven weeks. There was no loss of vision, and no further checks have been carried out. He has now had seventeen injections of tryparsamide. He received in addition six injections of 2 cc. each of iodobismitol, beginning January 1. The urine showed 2 plus albumin and many casts, which cleared when the bismuth was stopped. Neoarsphenamine was started March 23 with 0.15 Gm. increasing to 0.6 Gm. weekly. The tryparsamide and neoarsphenamine are given from three to four days apart. The urine continues negative; the lightning pains are gone. The tabetic gait is improved, and he no longer falls with the Romberg test. He has had only two mild attacks of paroxysmal tachycardia since the start of his malaria, and there has been no recurrence of the fibrillation. Mentally he has improved progressively until now he is apparently normal in his business judgment and social contacts. My tentative plans are to continue therapy as follows: two more injections of 0.6 Gm. of neoarsphenamine, completing a course of 4.65 Gm., followed by a bismuth compound again for a course of ten to twelve weeks if the urine remains clear. At the same time tryparsamide is to be continued uninterruptedly. I shall check the spinal fluid again in December. Potassium iodide is refused by the patient. 1. What further treatment should be carried out? 2. How long should the tryparsamide be continued? 3. No cardiovascular check up by x-rays or fluoroscope has been made; is this advisable? 4. The prognosis originally given the family was poor. What are the patient's chances now for a permanent remission with adequate therapy? 5. Is it likely that the paroxysmal tachycardia was due to the syphilis and if so does malaria help this type of lesion? Any other suggestions or comments will be most welcome.

ALBERT C. DANIELS, M.D., San Rafael, Calif.

ANSWER.—1. It is suggested that the correspondent stop giving neoarsphenamine now and not repeat it. Neoarsphenamine has not proved to be efficacious in parenchymatous brain and spinal cord syphilis (dementia paralytica or tabes dorsalis). In other forms of neurosyphilis (meningovascular) it may be used to advantage.

2. Tryparsamide should be used once every week for the next thirteen weeks with the same precaution regarding the optic nerve heads as well as the visual fields as before. No more tryparsamide after this for at least eight to twelve weeks.

3. In order to determine the type of cardiovascular disease it is important to have a fluoroscopic, flat x-ray plate and electrocardiographic study of the heart.

4. It is impossible to give any definite prognosis. From the evidence submitted it seems reasonable to believe that the

treatment has been the responsible factor in bringing about the clinical improvement. If this is true, the ultimate outcome may be favorable for some time to come. It is not possible to cure absolutely either dementia paralytica or tabes dorsalis. If the cardiovascular and renal systems remain in a good functioning state, a new course of tryparsamide (from 2 to 3 Gm. every week) for from twenty to thirty weeks can be started after a rest period of from eight to twelve weeks. After this some form of bismuth or mercury can be given intramuscularly twice weekly for thirty weeks.

5. If the paroxysmal tachycardia is due to syphilis, malarial therapy is definitely contraindicated.

6. During the rest period some form of electrical hyperpyrexia can be given. The patient should have from six to eight treatments in which the temperature is permitted to rise to 103 to 103.6 F. for at least two to four hours. A treatment may be given every second or third day.

ANKLE CLONUS IN INFANT

To the Editor:—An infant boy, aged 3 months, has shown for the past month a bilateral clonus usually voluntarily induced by the physician but at times involuntary and without pressure applied to the foot. The reflexes are slightly hyperactive, the Babinski sign is positive, and there are no other pathologic reflexes. The legs are not spastic and there is no limitation of motion. There was no instrumentation at birth, which occurred after only four and a half hours of labor. There was no injury to the child at any time. The ankle clonus is becoming progressively worse. Please state the possible etiology, prognosis and treatment.

M.D., New York.

ANSWER.—In a child of 3 months the plantar reflex is of limited diagnostic value. Monrad-Krohn found that during the first year of life 77 per cent of children had an extensor (Babinski) response. A bilateral Babinski sign at three months is therefore considered a normal response, supposedly because the pyramidal fibers (corticospinal tract) are not yet myelinated. Bilateral ankle clonus, however, is more suggestive of organic disease of these tracts; patellar clonus, if present, would almost certainly indicate an organic lesion. Ankle clonus plus a bilateral Babinski response in this patient add weight to the suggestion of a structural lesion, but at 3 months of age no diagnosis based on these signs can or should be made. Especially is this true in view of the absence of spasticity or paralysis and the history of normal easy delivery. The disease most seriously to be considered in the future is infantile cerebral palsy (Little's disease). The increase in the ankle clonus is suggestive but not diagnostic of this condition. Any discussion on prognosis and treatment is not justified until the diagnosis is at least made clear. The child should be repeatedly examined at intervals of three months.

BLOOD SEDIMENTATION RATE IN PULMONARY TUBERCULOSIS

To the Editor:—Can you explain the following to me? I have had at least ten cases diagnosed as early pulmonary tuberculosis. The diagnosis was determined by history, physical examinations and x-ray examination of the chest, all in adults. The blood sedimentation rate was determined in all of them prior to treatment, which consisted of confinement to bed, forced feeding, cod liver oil and calcium. All gained from 15 to 20 pounds (7-9 Kg.), the cough disappeared, and x-ray examination showed a deposit of calcium about the area of infection. Now the thing I cannot account for is that they all show a decidedly more rapid sedimentation rate after treatment instead of a slower one, as I should expect.

EUGENE C. LOWE, M.D., Miami, Fla.

ANSWER.—The red blood cell sedimentation rate may be definitely increased during the development of the primary complex and again when clinical tuberculosis is present. Wallgren (*Am. J. Dis. Child.* **49**:1105 [May] 1935) has shown that when fever occurs during the development of the primary complex it is of short duration; usually it does not persist longer than two or three weeks. However, the red cell sedimentation rate, which is increased while the fever is present, usually does not reach a normal level until several weeks after the fever has disappeared.

As all these patients showed deposits of calcium about the areas of infection, one might infer that the lesions represented parts of primary complexes. While it is true that calcium may be deposited in the secondary or reinfection type of tuberculous lesions, apparently it is not the rule, whereas in primary lesions it is a frequent occurrence. Calcium deposits have been demonstrated in primary lesions as early as four months after the lesion begins to develop. However, they usually do not reach sufficient size to be demonstrated by x-ray examination until a considerably longer time has passed. If the lesions in the ten patients were primary and calcium is already in evidence, one would expect that in the absence of other causes of increased sedimentation rate it would now have reached a normal level. If the lesions were of the secondary or reinfection type, it is not unusual for the sedimentation rate to continue at a definitely increased level over a considerable period after all other symptoms have disappeared and the x-ray shadows are stationary or have decreased in size. Symptoms and x-ray shadows are not always a reliable criterion with reference to activity of a tuberculous process. Symptoms usually disappear long before activity ceases. The x-ray shadow may definitely decrease in extent and yet within the lesion which casts the shadow, or even outside the shadow, active lesions may persist.

Another important fact that must be borne in mind is that tuberculous lesions are rarely single. Often multiple primary complexes are laid down in various parts of the body and the secondary or reinfection type of tuberculosis may develop in other organs preceding, during or subsequent to the development of pulmonary lesions. Examination of most of the other internal organs for tuberculous lesions during life is difficult and therefore active lesions in one or more parts of the body may cause the sedimentation rate to remain increased long after the pulmonary lesion has ceased to be active. Increase in the red blood cell sedimentation rate is not specific for tuberculosis. Therefore, nontuberculous infections involving other parts of the body may be responsible for the increase in the sedimentation rate.

GENERALIZED MUSCULAR TWITCHINGS

To the Editor:—A man, aged 25, has been under constant mental strain for about seven months. One evening before some important examinations he started having muscular twitches, which have persisted for one month. The twitchings may start anywhere, in the thigh, neck, or buttocks, for example, and then may reappear anywhere. Thus a muscle in the neck will twitch, then one in the arm, leg, buttock, or eye, without any sort of regularity or rhythm. The twitch never lasts more than five seconds, disappears, and reappears somewhere else on the body. Sometimes a large portion of the muscle is involved and sometimes only a restricted area. These twitches are subjectively perceived but never seem to hit exactly the same place twice. There has been no muscle wasting, weakness or atrophy. They always appear when the patient is muscularly inactive and never while he is doing something that requires muscular activity, such as tennis. The Wassermann and Kahn reaction tests are negative and otherwise he is a healthy adult who is prone to worry. What is the nature, etiology and treatment of this condition? M.S., New York.

ANSWER.—Transient twitches or quivering of muscles, known as myokymia, affecting a few muscle bundles, usually without movement of the joint, constitute a fairly common symptom in patients suffering from anemia or neurasthenia. The muscles commonly involved are those around the eye, the deltoid, biceps and triceps, and the glutei and the quadriceps. It is characteristic for myokymia to occur when the muscle is not in active use.

There are many intrinsic diseases of the central nervous system in which myokymia is also a symptom, but they are accompanied by atrophy, paralysis, changes in the electrical reactions, or alteration of the deep or superficial reflexes. Myokymia is seen in progressive muscular atrophy, amyotrophic lateral sclerosis, syringomyelia, progressive bulbar palsy, and a few other chronic intrinsic degenerative conditions of the spinal cord and medulla. There is no reason to believe from the history as stated that this young man suffers from any of these serious diseases. The condition will disappear if adequate attention is paid to the patient's neurasthenia, or to his anemia, if this is present.

MONGOLIAN IDIOCY

To the Editor:—Have there been any new developments in the treatment of mongolian idiocy? The mother insists that the child's mental condition is due to a fall shortly after birth. May the fall be the exciting factor in bringing on this condition? The child is at present 9 years old and is kept at home. What do you think should be done with such a child?

M.D., Florida.

ANSWER.—A great deal of effort has been made, especially by the endocrinologists, to devise some method of treating mongolian idiocy (or, better, imbecility), but nothing new has been devised. Institutional care is perhaps not as imperative in cases of this sort as in others, but the social factors should always be taken into consideration. Most psychiatrists, particularly those who deal with mental defectives, are familiar with the statement made by parents that the child's mental deficiency is due to a fall. This very likely is due to some wishful thinking that nothing in the heritage which they give to the child is responsible for the condition. Since the etiology of this type of mental deficiency is unknown it is impossible to say that the fall had no connection with it, but since certainly 99 per cent of mongolian idiots are obviously such at birth it is highly improbable. As for the disposition of such a case, the decision must lie with the persons concerned. If the child is a

menace in the community and it is difficult for the parents to control it, institutional care is indicated for the safety of all concerned. Another consideration which is very important is whether there are any siblings; brothers and sisters who go to school are likely to be taunted about having an imbecile in the family. A great deal more care is lavished on such a child, resulting in the neglect of the normal children. On the other hand, there are occasional cases of only children whose parents get a great deal of satisfaction out of caring for the defective child, and they do much more for such a child than could be done for him in an institution.

PYOMETRA

To the Editor:—A white woman, aged 33, a quintipara with five normal deliveries, was operated on nine months ago for a relaxed perineum, moderate prolapse of the right cystic ovary and a diseased appendix. The operation consisted of a diagnostic curettage (pathologic examination gave negative results), repair of the vaginal outlet, right salpingo-oophorectomy, left salpingectomy, Coffey suspension of the uterus and appendectomy. Since the operation the patient has had a continuous discharge (before the operation she had no discharge) and profound continuous pain in the lower part of the abdomen, mostly in the midline. The menses occur every three weeks, last from six to seven days and contain large and small clots having a fleshy and at times putrid odor. Following the period the discharge is brownish for two or three days, then greenishly tinged and then a profuse yellowish mucoid purulent discharge, requiring three or four napkins daily because of the discomfort of this acrid discharge. No special organisms or Trichomonas have been found. Examination revealed the perineum healed, the cervix clean; hence the discharge must be coming from the body of the uterus. Bimanual examination was difficult owing to the obesity (200 pounds, 90 Kg.) of the patient. However, the uterus was freely movable but tender on palpations; in fact, the whole lower part of the abdomen was tender. No masses were elicited. Please omit name.

M.D., Pennsylvania.

ANSWER.—The probable cause of the patient's profound pain in the lower part of the abdomen and the purulent vaginal discharge is a pyometra, or accumulation of pus, in the uterine cavity. This may be due to a stricture of scar tissue in the internal os or anywhere else along the cervical canal, the result of trauma of a strenuous dilation and curettage. The frequent menses may be due to interference in the blood supply of the ovary, which was not removed. This may be a temporary disturbance. The diagnosis of pyometra may be verified or disproved by inserting a probe or, better still, a No. 4 or 5 Hegar dilator into the cervical canal beyond the internal os. If a purulent discharge escapes, the diagnosis of pyometra is confirmed. The treatment consists in the insertion of a stiff rubber tube to permit drainage of the uterine contents. Of course, this procedure must be carried out under aseptic precautions. If purulent material escapes from the uterine cavity, the drainage tube should be left in place a few days. No anesthetic is necessary for the insertion of the probe or cervical dilator, but the patient should be given a narcotic before the procedure is carried out.

POSSIBLE TOXICITY OF ROTENONE INSECT DUST

To the Editor:—Please advise as to the toxicity danger in the use of Rotenone Insect Dust by Hammond's on vegetables, beans, cabbage and cucumbers.

H. H. RITTENHOUSE, M.D., Bridgeville, Pa.

ANSWER.—Rotenone itself is seldom used as an insecticide, but rather the powdered crude root of Cube or Derris (containing rotenone, deguelin, toxicarol and tephrosin as the principal active constituents). As judged from animal (and to some extent, human) experimentation there is no danger of acute poisoning as a result of ingestion of vegetables sprayed with rotenone, cube or derris. In this connection it has been estimated that allowing for a maximum spray deposit and assuming that man is no more resistant than the most susceptible of the laboratory animals, a person would have to eat about 4,000 apples sprayed with derris to obtain an acutely fatal dose. The problem of a possible chronic intoxication following the prolonged use of vegetables treated with derris or rotenone has been studied on animals and, while further work is desirable, results of these observations also lead one to believe that the human health hazard here is also low. Hammond's Rotenone Insect Dust is said to be a stabilized rotenone product.

References:

Haag, H. B.: Toxicological Studies of Derris Elliptica and Its Constituents, *J. Pharmacol. & Exper. Therap.* **43**: 193 (Sept.) 1931.
Ambrose, A. M., and Haag, H. B.: Toxicological Study of Derris, *Indust. & Engin. Chem.* **28**: 815 (July) 1936.
Mathews, J. A., and Lightbody, H. D.: Toxicity of Derris and Cube, *ibid.* **28**: 812 (July) 1936.
Ambrose, A. M., and Haag, H. B.: Toxicological Studies of Derris, *ibid.* **29**: 429 (April) 1937.
Haag, H. B.: Toxicity of Rotenone, *Soap* **13**: 137, 1937.

SHORT WAVE DIATHERMY IN ARTERIOSCLEROSIS

To the Editor:—While I was giving a short wave treatment with the induction coil on 25 meters—the coil in pancake fashion over the forehead—to an infected sinus in a man, aged 55, the patient within three minutes after the treatment was started suddenly had a severe convulsion with complete loss of consciousness. Following some heavy breathing, the respiration stopped and the pulse could not be found. Before epinephrine could be administered, respiration and heart action gradually returned and the patient after three quarters of an hour of unconsciousness slowly recovered. This was the patient's second treatment, the first being tolerated without any difficulty. As the treatment had just begun, the amount of heat created was moderate and the patient's statement after he had fully regained consciousness was that he felt slightly warm the last he could remember. The blood pressure was 200/120 a week prior to the treatment and 110/50 following the accident. With the exception of hypertension and a chronic sinus infection, the patient's condition was normal. There was no history of similar attacks. What in your opinion happened and is this a common occurrence? Is hypertension or moderate arteriosclerosis a contraindication to treatment with the induction cable placed on the forehead?

M.D., New York.

ANSWER.—Complaints of headache, nervous restlessness and slight fever by workers near the powerful short wave radio broadcasting tubes was the incentive for large scale research work in the therapeutic use of short wave radiation. During the past few years short wave diathermy to the sinuses and the brain by both condenser plates and by coil treatment has been extensively employed by investigators and clinicians. Search of the literature fails to disclose any reports of ill effects of such heat treatment. In animal experiments with the 15 meter wave applied to the brain (Horn, Kauders and Liebesny: *Wien. klin. Wchnschr.* **30**:936 [July 27] 1934), necropsy showed a selective hyperemia of the meningeal blood vessels as compared with control animals. The same effect has been shown in necropsy of the brain of paralytic patients after a course of short wave treatments. In the case described the best explanation is a sudden heat effect causing a reactive spasm in presumably arteriosclerotic blood vessels. There appears to be no definite contraindication to short wave coil treatment to the sinuses in suspected arteriosclerosis of the cerebral vessels, provided the patient is under constant observation and that the heating is increased gradually and is always kept within comfortable toleration.

POSSIBILITIES OF MENSTRUATION AND PREGNANCY AFTER IRRADIATION AND OVARIAN TUMOR

To the Editor:—An unmarried woman, aged 26, had marked menstrual discomfort since puberty and, for two years previously, had profuse bleeding at the menstrual period, so that she was anemic and unable to do her work properly. In December 1932, 600 roentgens was given over the right ovary and, as the profuse bleeding began again the following month, 50.44 mg. of radium was inserted into the uterus for sixteen hours in January 1933. This stopped the menstrual bleeding, but she was told that it would not be permanent. Shortly after this a left ovarian tumor was diagnosed and removed and was found to be a dermoid cyst. At the same time a small wedge-shaped section of the somewhat sclerotic right ovary was also resected. Owing to subsequent left kidney operations, one for calculus and another within a few days because of stricture and ureteral obstruction from which she was not expected to recover because of the severe shock, her health has been poor. Much of her difficulties were found to be due to a systolic pressure ranging between 65 and 90 mm. of mercury. Appropriate treatment immediately raised this to 120 mm.; she has gained 10 pounds (4.5 Kg.) to a present weight of 116 pounds (53 Kg.) and does not have the weak spells that had plagued her for six years. Has or has not this woman, now 33 years old, any chance of returning menses and of becoming pregnant? What plan of endocrine medication would be most likely to stimulate any remaining ovarian tissue? If she should become pregnant, what are her chances of having a normal child? She is anxious to have children but will not marry with the present outlook.

M.D., Pennsylvania.

ANSWER.—In spite of the lapse of four and a half years there is definitely a chance for the return of menstruation in this case. The reason for a fair degree of optimism is the patient's youth at the time the roentgen and radium treatments were given. In some instances much larger doses have been administered than this patient received and menstruation has returned after an interval of a number of years. On the other hand, in some young women a small amount of radiation therapy has resulted in a permanent amenorrhea. Unfortunately there is no way to foretell which young women will have a permanent absence of the menses and which ones will not.

It is possible for the patient to be ovulating even though she does not menstruate. A simple way to determine this is to remove small pieces of endometrium at weekly intervals with a tiny curet either with or without suction. This procedure may readily be performed in a physician's office without any anesthetic. If, on microscopic examination, repeated specimens show a stationary type of endometrium or atrophic tissue, the patient is almost certainly not ovulating. If successive changes are found that reveal both proliferative and secretory endometrium, ovulation is probably taking place.

The only endocrine products that may stimulate ovarian function are those derived from the anterior pituitary gland or the gonadotropic substance derived from the urine of pregnancy. However, the results of such therapy have not been promising. If the patient should become pregnant and continue to full term, her chances for having normal children are just as good as those of women who have not received radiation therapy. There has been controversy on this subject, but the consensus is that radiation therapy applied before fertilization of an ovum does no harm. On the other hand, when roentgen therapy or radium is applied after conception has taken place, distinct harm may result to the fetus.

ATTACKS OF EPIGASTRIC PAIN

To the Editor:—A white woman, aged 37, dates her illness from the birth of a child fifteen years ago. Three days after, she had an attack of epigastric pain accompanied by nausea. There was no vomiting and no radiation of pain. Relief was obtained by morphine. This pain has persisted on and off for two years. Her appendix was removed with no effect. Roentgenograms of the gastro-intestinal tract were negative. One year later the gallbladder was removed and in six months the attacks recurred. The attacks could be relieved by morphine. There was belching and rarely vomiting. Between attacks she was perfectly well. Six years ago she was operated on for a right tubal pregnancy. Nine months ago she began to use a drug containing pantopon, papaverine and atropine derivative. Taken by mouth, it does not give the help that she gets when it is dissolved in some water and instilled into the rectum. Two months ago a surgical exploration disclosed nothing except some adhesions, which were broken. Three days later a typical attack occurred. Since then I have made numerous skin tests and had a gastro-intestinal series done. All were negative. Physical examination discloses some tenderness in the epigastrium. The blood pressure is 120 systolic, 68 diastolic. The weight ranges from 137½ to 124 pounds (62-56 Kg.) now. The Wassermann reaction is negative; blood counts and urine examination give normal results. At present she gets two attacks a day, one of them waking her from sleep at night. She describes the pain as a muscle soreness. She has been loaded with antispasmodics and analgesics to no avail. She has been on low fat and elimination diets, but the attacks occur just the same. Will you suggest a diagnosis or outline further studies and treatment?

M.D., New York.

ANSWER.—The pain is probably due to visceral spasm associated with some trouble in the sympathetic nervous system. A spinal Wassermann test should be done and, if this is negative, operation on the sympathetic ganglion might be considered.

RUSTED STEEL FROM SWEATING

To the Editor:—With a local industry in which I am plant physician the following problem has arisen on which I should like your advice: Of a group of men who make a final inspection of equipment that must fit very closely, some rust the finish in inspecting it. By fingerprinting them on similar steel surfaces I have found which ones are responsible for the rusting and this has been checked by their inspection output in the plant. In those men who rust the steel in their inspection I have found no physical abnormalities, nor, as far as I can ascertain, are their habits different from those of their colleagues who do not rust equipment. Is there a difference in the secretions of the hands of different persons? Is this difference something that can be anticipated by suitable physical or laboratory examination prior to their employment? Can you suggest some way of correcting this rusting propensity of these otherwise good workmen?

M.D., Indiana.

ANSWER.—The chemical constituents of perspiration are not precisely the same for all persons, and the same person may demonstrate appreciable changes during different periods of the same day. Long continued profuse sweating produces a more alkaline sweat. Also, as sweating is sustained, the output of sodium chloride and other mineral salts may be increased. The high output of sodium chloride is associated with metal rusting, although this one chemical may not be the sole factor responsible. The use of rock salt on streets for antifreeze purposes has become a source of complaint in connection with the rusting of the steel of automobiles. In some plants it has proved desirable to make use of stainless steel in connection with mechanisms requiring close fittings and under other circumstances. It is not readily possible to determine, other than by trial and error, members of any work group who may contaminate metal by the products of perspiration. However, a number of avenues offer escape from this type of damage. In some instances rubber gloves may be worn to advantage. If this is not practical, a wide variety of chemicals may be utilized as sweat depressants. No one of these is entirely free from injury. Their use in industry merely substitutes minor physiologic damage for the damage that is done to steel parts through causing rust. Among other agents that may be used are aluminum chloride, aluminum acetotartrate, alum, solution of formaldehyde, zinc oxide and titanium dioxide. Two typical formulas are: 1. Aluminum chloride 16 Gm., distilled water 100 cc.; mix, filter and apply as a lotion. 2. Aluminum sulfate 32 Gm., potassium permanganate 6 Gm., water 100 cc.; mix, dissolve and apply as a lotion.

MENSTRUAL PAIN AND CURE OF GONORRHEA

To the Editor:—A young married woman complained of a moderate vaginal discharge and severe abdominal pain during her menstrual period. Examination showed that pus could be expressed from the para-urethral (Skene's) ducts and that there was a moderate degree of cervicitis. A blood test gave a negative Wassermann reaction but a positive 4 plus gonorrheal complement fixation. The assumption is that this patient has a chronic gonococcic infection of Skene's ducts and of the cervix. The husband gives a history of syphilis adequately treated prior to marriage, but no history of gonorrhea. His blood is negative for both syphilis and gonorrhea. Would you kindly answer the following questions: 1. Does the infection account for the abdominal comenstrual pain? 2. What is the most approved method of treatment, especially of Skene's ducts? 3. How long will treatment be necessary to cure the condition? 4. What are the criteria for complete cure, so that coitus may be indulged in without danger of infecting the partner?

M.D., New York.

ANSWER.—1. Pelvic pain associated with gonococcic infection may be present only at the time of menstrual congestion, but it is more characteristic of gonorrhea for the patient to have pain at other times also. Nothing is stated relative to palpable disease of the adnexa; if there is a pathologic condition sufficient to produce symptoms there is usually palpable thickening, or at least tenderness, in the region of the adnexa.

2. Skene's ducts, each 1 cm. in length and located in the floor of the urethra, are the rudimentary homologues of the prostate gland. They open on the floor of the urethra, just at or within the meatus. There are from two to four para-urethral glands near the urethral meatus. Real pus expressed from Skene's ducts is pathognomonic of gonococcic infection, but one must be careful not to confuse pus with innocent inspissated secretion, which may often be expressed from the duct orifices. Bristle-like thickening of the duct affords confirmatory evidence of gonorrheal disease. Many leading laboratories attach little importance to the gonorrheal complement fixation test. It is of uncertain value.

3. A woman who harbors the gonococcus tends gradually to rid herself of infection within a few months, provided she does not have a consort who is also infected, and provided further that she does not drink alcoholic beverages or indulge in sexual excesses. Traumatic local treatments during the active course of the disease tend to drive the gonococcus into the deeper tissues and prolong the infection.

4. There are no specific criteria for complete cure. Cessation of symptoms and absence of the gonococcus in smears and in cultures should be followed by a quiescent period of six months or a year, preferably the latter, before one can be assured of a cure. In all cases a search should be made for pockets of infection in Skene's ducts and in the cervix before the patient is discharged as cured.

TUBERCULOSIS OF HIP AND CONGENITAL DISLOCATION

To the Editor:—I have a patient who probably had tuberculosis of the left hip in childhood. Be that as it may, she has a pseudarthrosis of the left hip. The left lower limb is shorter, but she bears her weight in walking pretty evenly on both sides, i. e., she does not "favor" one side; I take it that this makes the prognosis better. The left trochanter is somewhat atrophied and a little posterior to its usual position. With the pelvimeter that I have I find it difficult to measure the transverse diameter of the outlet. By internal examination I cannot make out any great deformity. The patient is eight months pregnant. The measurements are as follows: anterior-superior spines, 22 cm.; crests, 28 cm.; trochanters, 31 cm.; right oblique, 22 cm.; left oblique, 21 cm.; superior conjugate, 20 cm.; anterior-posterior of outlet (uncorrected), 12 cm.; transverse of outlet, 8 cm.; posterior-superior spine to opposite tuber ischia: right, 20 cm.; left, 17 cm.; last lumbar to anterior-superior iliac spine of same side: right, 21 cm.; left, 17 cm.; posterior-superior spine to opposite greater trochanter: right, 21 cm.; left, 25 cm.; posterior-superior spine to lower margin of symphysis of same side: right, 22 cm.; left, 21 cm.; middle of back to posterior-superior spine: right, 3.5 cm.; left, 5 cm. This case does not strike me as one of unilateral congenital dislocation. Please omit name.

M.D., Pennsylvania.

ANSWER.—The data supplied are insufficient to warrant any accurate diagnosis. The question of a dislocation of the hip should be verified by x-ray films. The limp presented by a patient with congenital dislocation of the hip results from the occurrence of the Trendelenburg sign when the weight is carried on the dislocated side; that is, the pelvis on the opposite side drops instead of having the normal elevation that should occur from the normal mechanism about the hip.

A tuberculous hip of long standing usually shows evidence of a destructive process which has involved the acetabulum, the head of the femur or both. There is evidence of cavitation of the involved areas and possible growth disturbances resulting from epiphysial destruction. The motion in such a tuberculous hip is more apt to be restricted in all directions and at times may be painful. The prognosis for a normal delivery would seem most favorable. Undue strain on the involved hip should be reduced to a minimum, and the possibility of a flare up of

a tuberculous condition must be kept in mind. In the event of this being a congenital dislocation, there should be no increase of symptoms unless the patient puts on considerable weight. A detailed x-ray study would seem most desirable.

BELCHING

To the Editor:—A white man, aged 37, complains of belching, which is more severe at night, for the past twelve years. It is so severe that his sleep is disturbed. He notices that certain foods increase the belching. There is no pain or tenderness present in the abdomen. The bowels are regular and the stools normal. He has a slight cough; no other symptoms are present. The family history is essentially negative. He has an executive position in a large concern, demanding a great deal of responsibility. The patient is rather thin and somewhat undernourished. He weighs 122 pounds (55 Kg.) and is 5 feet 7 inches in height. The scalp, eyes, ears and throat are normal. In the nose the turbinates are small and there is a wide gap between the turbinates and the septum, the result of a resection of the middle and inferior turbinates fifteen years ago. The neck and thyroid are not enlarged; there is no cervical adenopathy. The lungs and heart are normal. The blood pressure is 110 systolic, 75 diastolic. The abdomen, genitalia, rectum and extremities are normal. The skin is normal. The reflexes are equal and slightly hyperactive. The urine is normal. The hemoglobin is 75 per cent (Sahli). Red blood cells number 3,800,000, leukocytes 7,000, with the differential count normal. The Wassermann and Kahn reactions are negative. Gastric analysis is normal. X-ray and fluoroscopic examinations reveal a normal chest. Gastro-intestinal x-ray examinations show only slightly increased peristalsis of the stomach and ptosis of the colon. Gallbladder studies give negative results. The diagnosis of aerophagia was made and explained to him. He was told to omit foods that disagreed with him and to eat slowly. Tincture of belladonna, a sedative and liquid petrolatum were given with no apparent relief. Any suggestions that you may give in relieving this condition will be greatly appreciated.

M.D., Ohio.

ANSWER.—Since the patient has a hemoglobin of 75 per cent (Sahli) and an erythrocyte count of 3,800,000, it is important that he be given iron. It is also important to remove gas-producing foods, such as members of the cabbage family and baked beans. Since the worst symptoms are at night, it is important that he sleep with a very thin pillow or preferably none at all. When he has a desire to belch he must hold his head up instead of kinking it forward, as he probably does now. Putting his head forward is a maneuver which makes him swallow more air. There is no gas produced in the stomach except in the presence of a high grade obstruction or when such substances as sodium bicarbonate are taken which combine with the hydrochloric acid to form carbon dioxide. He should always keep his head back when he has the desire to belch. Tell him to let what will come up by itself but that he must not try to get it up or keep it down.

ATTEMPTED STERILITY BY IMMUNIZING TO SPERMATOZOA

To the Editor:—Some time ago I read an article on the production of temporary sterility in the female by injecting semen intramuscularly. Since the flood I have been unable to find the reference to this procedure. Kindly let me know the status of this procedure and give references to the original work.

M.D., Ohio.

ANSWER.—Much experimental work has been done on animals to create a biologic immunity against spermatozoa. The injection into male rabbits either of their own semen or of a serum obtained from fowls into which rabbit semen has been repeatedly injected produces a marked depression of spermatogenesis. The subcutaneous injection of spermatozoa into female rats renders them temporarily sterile. In general, the immunity thus produced by spermatoxins is specific for the species but there are many exceptions to this rule, for the semen of the bull and the ram can immunize other animals, and the female rat may be sensitized by various sorts of semen.

Numerous workers have attempted to apply these results to the human female for purposes of contraception. In Russia it is the custom to use a preparation of human semen obtained from a condom specimen diluted with two parts of salt solution and to give from twelve to eighteen intramuscular injections in the buttocks twice a week, the amounts being gradually increased from 0.5 to 5 cc. No bad results have been observed. Baskin offers a simpler technic (*Am. J. Obst. & Gynec.* **24**:892 [Dec.] 1932).

The efficiency of the immunization is determined either by noting immobilization of spermatozoa in a hanging drop preparation or by a precipitation test. Ordinarily the result of one series of injections remains effective, both by laboratory evidence and according to clinical standards, from six months to a year.

One is forced to conclude that the value of this procedure as a contraceptive measure is still *sub judice*. The risks seem to be almost negligible, but the efficacy of the method cannot yet be fully evaluated.

HORMONE TREATMENT OF INFANTILE UTERUS

To the Editor:—What product can I use to stimulate uterine growth? The patient in question has been diagnosed by injection of iodized oil as having an infantile uterus. Will she ever be able to conceive? She is 30 years old and has oligomenorrhea but no other trouble with her other bodily functions. The basal metabolic rate is minus 10. Please mention dosage and length of administration.

M.D., Cambridge, Mass.

ANSWER.—Estrogenic products, such as theelin, theelol, amniotin, progynon-B, and progynon-DH and emmenin, are fairly satisfactory substitutes for ovarian activity, but they do not stimulate the ovary. Clinical use for troubles other than menopause symptoms and vaginitis in children is of doubtful value.

The pituitary gland of the living subject stimulates the ovary to activity, but clinically satisfactory gonadotropic products from the pituitary are not available for therapeutic use. Gonadotropic substance from the urine of pregnant women or from the placenta also stimulates the ovary, but it is doubtful that it would be of any significant use in this case.

OIL IN WATER

To the Editor:—The water supply of this community is obtained from two wells about 250 feet deep. Bacterial examination shows no contamination. The water is fairly soft and of good quality. There is some oil in the water, which varies from time to time from a very thin film to small droplets. This oil probably comes from several sources: from the pumps, in which case it would be plain lubricating oil; from pipes and fittings used in the oil business, in which case it might be crude oil; or from the water strata, owing to the practice of some oil companies throughout the oil field of forcing the water to the surface with natural gas under high pressure. I doubt that the latter is responsible for much of the oil in the water. What effect, if any, will this oil have on the human system? Would it cause rather severe cases of diarrhea?

L. T. Cox, M.D., Kermit, Texas.

ANSWER.—Several areas in Texas possess drinking water supplies contaminated with oil. At the least, such water produces psychologic injury in the causation of nausea, in the curtailment of proper quantities of water intake and in general apprehension. Tourists through this section of the country on occasions report disturbing diarrheas, which are sometimes said to disappear on changing to bottled water for drinking purposes.

ALCOHOL INJECTIONS FOR PAIN

To the Editor:—I should like information and references concerning the use of alcohol in the injection of the posterior sensory roots and the peripheral sensory nerves to relieve constant pain. I am particularly interested in the precentage of alcohol recommended for injection, the possible duration of the anesthesia, and the untoward effects that might be expected.

C. S. FRANCKLE, M.D., St. Petersburg, Fla.

ANSWER.—Ninety-five per cent absolute alcohol is used ordinarily in injecting posterior sensory roots and for injection directly into peripheral sensory nerves. The relief of pain sometimes lasts as long as a year and a half. More frequently it is less than that, and often only nine months. The most common untoward result is painful neuritis, which may persist for weeks. If the alcohol is injected too superficially, slough may result or a sterile abscess may develop. Trauma from the needle striking a nerve trunk, or from pushing a nerve trunk against bone and injuring it, may be erroneously attributed to the alcohol. When a needle has been inserted at the wrong angle for paravertebral injection of a sensory root, the needle may be inserted through the intervertebral foramen and puncture the dura of the spinal cord. Too much alcohol injected into the spinal fluid may have a fatal result. Subdural injection of alcohol for relief of pain usually is carried out with from 0.5 to 1 cc. of absolute alcohol. The complication to be avoided in this injection is paralysis.

CONGO RED IN TUMORS AND ROENTGENOLOGY

To the Editor:—I am anxious to learn the details of the treatment of cancer with congo red. Can you outline the course of treatment? Where can I find the name and address of the doctors studying the drug?

F. A. NICOLETTI, M.D., Pueblo, Colo.

ANSWER.—The use of congo red was reported by Drs. Isidore Arons and Boris Sokoloff at the fifth International Congress of Radiology, held in Chicago in September. It was not recommended for the treatment of cancer but for roentgen sickness, which occurs after patients have been treated with x-rays whether they have cancers or benign tumors. In animals with freshly inoculated tumors some inhibiting effect was noticed on the tumor, but not after the growth had been well established. This is probably not due to any direct effect on

the tumor but to an impairment of the health of the animal, for the injection of many substances of a toxic nature will slow down the growth of freshly inoculated tumors temporarily. No such effect was observed after the tumor was thoroughly established in the animal's body. Arons and Sokoloff combined congo red with liver extract and found that tumors also were inhibited but that the effect was only temporary. Some of the newspaper reports were slightly in error, for there was no reference in the original article to the use of congo red in the treatment of cancer.

POSTOPERATIVE MEDICATION FOLLOWING CURE OF MORPHINE ADDICTION

To the Editor:—A morphine addict has been thoroughly cured for about a year. She is to have an operation July 1. After the operation, morphine will have to be given to relieve the postoperative pain. Do you believe that she will become an addict again?

M.D., Ohio.

ANSWER.—There is little danger of using morphine in this case, provided its administration is properly controlled. The question may be raised whether the postoperative use of morphine is mandatory in this or any other case, as there are many excellent surgeons who do not employ it for this purpose and whose patients seem to get along satisfactorily with the use, if required, of some analgesics such as acetylsalicylic acid, aminopyrine, phenobarbital and codeine, either alone or in combination. If the patient cannot retain analgesic medication, the administration of the following suppository might be advisable:

℞	Soluble phenobarbital	1.0 Gm.
	Aminopyrine	3.0 Gm.
	Oil of theobroma	20.0 Gm.

Divide into ten suppositories. One every four hours as required.

RESPONSE OF PARALYZED PUPIL TO PILOCARPINE

To the Editor:—Will a paralyzed pupil contract in response to pilocarpine?

M.D., South Carolina.

ANSWER.—A pupil paralyzed by injury to the nerves of the iris will usually contract on administration of pilocarpine. The contraction lasts but a relatively short time, however, and is followed by a return of the mydriasis. A pupil paralyzed by rupture of the sphincter, which can sometimes be seen only with the slit lamp, will contract but partially or not at all with pilocarpine.

POSITIVE WASSERMANN TEST IN UNRESOLVED PNEUMONIA

To the Editor:—In Queries and Minor Notes in THE JOURNAL, October 16, page 1300, Dr. J. F. Loeble refers to "unresolved pneumonia (x-ray diagnosis) with positive syphilitic serologic reaction." The answer given in THE JOURNAL is not quite in keeping with the facts. For some years in my ward at the Philadelphia General Hospital, where the service is very large and the incidence of syphilis above the average, we have frequently encountered unresolved pneumonia in syphilitic patients. My son, Dr. Harold F. Robertson, and I reported a series of cases in *International Clinics* **3**: 23 (Sept.) 1932. At the recent meeting of the Pennsylvania State Medical Society, held in Philadelphia, Dr. Harold F. Robertson presented a similar series before the Section on Medicine, which I had the privilege of discussing at some length. This will be published in the *Pennsylvania Medical Journal*. From opportunities given to study such cases post mortem, we are of the opinion that damage to the lung precedes the development of pneumonia. This is revealed by perivascular infiltrations and fibrosis of various grades, necessarily dependent on the time factor of the underlying disease. We are convinced that a frank pneumonia in the absence of syphilis cannot produce a positive Wassermann or Kahn reaction. Syphilis is so all embracing in its assaults on human tissue that no legitimate reason exists which justifies exclusion of the lungs when syphilis has been present. Irrespective of its attack on nervous, bony or other structures, there is always more or less cardiovascular involvement, and when it is of long standing the aorta is increased in diameter to a greater extent than that seen in the hypertensive without syphilis. This, of course, we utilize only as a factor in determining in a relative way the duration of the syphilitic infection. In our experience, syphilis existent for any length of time is definitely capable of inviting delayed resolution in lobar pneumonia. We also encounter cases of another type in which an apparent syphilitic pneumonia exists, when blood cultures and all attempts at typing are negative and the physical signs are those of a lobar pneumonia, though the patient is not toxic or cyanotic. One lobe or the entire lung may be involved, and under antisyphilitic treatment the apical portions clear up more promptly than the base, and the base may remain permanently damaged, fibrosis and more or less thickening of the pleura eventuating. The third type is the gummatous lesion, which is usually diagnosed as tumor by x-ray examination and which always terminates with scarring and pleural involvement. One such gumma was so located in the apex of the right lung as to give rise to the diagnosis of a suprasulcus tumor, although Horner's syndrome was absent. When resolution occurs it is very gradual, and the lower lobe not seldom remains permanently damaged.

WILLIAM EGBERT ROBERTSON, M.D., Philadelphia.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 28. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, March 1. Sec., Dr. W. W. Council, Box 561, Juneau.

ARKANSAS: *Medical (Regular).* Little Rock, Dec. 21-22. Sec., Dr. L. J. Kosminsky, Texarkana. *Medical (Eclectic).* Little Rock, Dec. 21. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

COLORADO: *Basic Science.* Denver, Dec. 15-16. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver. *Medical.* Denver, Jan. 5-7. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Feb. 12. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven.

DELAWARE: Dover, July 12-14. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, Dec. 27-28 *Medical.* Washington, Jan. 10-11. Sec., Dr. George C. Ruhland, 203 District Bldg., Washington.

GEORGIA: Atlanta, June. Joint Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, April 5-6. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Jan. 25-27. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 21-23. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: *Basic Science:* Des Moines, Jan. 11. Sec., Dr. W. L. Strunk, Decorah.

KANSAS: Topeka, Dec. 14-15. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 7-9. Sec., State Board of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, Dec. 9-11. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MARYLAND: *Medical (Regular).* Baltimore, Dec. 14-17. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, Dec. 14-15. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA: *Basic Science.* Minneapolis, Jan. 4-5. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Jan. 18-20. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: *Reciprocity.* Jackson, Dec. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

NEBRASKA: *Basic Science.* Omaha, Jan. 11-12. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, March 10-11. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.

NEW JERSEY: Trenton, June 21-22. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April 11-12. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York, and Syracuse, Jan. 24-27, June 27-30, and Sept. 19-22. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Endorsement.* Raleigh, Dec. 6. Sec., Dr. B. J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, Jan. 4-7. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OHIO: Columbus, Nov. 30-Dec. 3. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: *Basic Science.* Oklahoma City, Dec. 1. Sec. of State, Hon. Frank C. Carter, State Capitol Bldg., Oklahoma City. *Medical.* Oklahoma City, Dec. 8. Sec., Dr. James D. Osborn, Jr., Frederick.

PENNSYLVANIA: Philadelphia, Jan. 4-8. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, Jan. 6-7. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 18-19. Director of Medical Licensure, Dr. B. A. Dyar, Pierre.

TENNESSEE: Memphis, Dec. 22-23. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

VERMONT: Burlington, Feb. 8. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 8-10. Sec., Dr. J. W. Preston, 28½ Franklin Road, Roanoke.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 11. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 11-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners* and *Special Boards* were published in THE JOURNAL, November 20, page 1748.

Missouri June Examination

Dr. Harry F. Parker, state health commissioner, reports the written examination held at St. Louis, June 3-5, 1937. The examination covered 14 subjects. An average of 75 per cent was required to pass. One hundred and fifty-six candidates were examined, 144 of whom passed and 12 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Howard University College of Medicine	(1935)	80.9, (1936)	83.4
Northwestern University Medical School		(1937)	83.5*
School of Medicine of the Division of the Biological Sciences		(1937)	83.5

University of Louisville School of Medicine	(1937)	85.7
Tulane University of Louisiana School of Medicine	(1935)	87.2
University of Michigan Medical School	(1932)	88.7
University of Minnesota Medical School	(1937)	84.4
St. Louis University School of Medicine	(1927)	82.4, (1935) 83.1, (1937) 77.6, 77.7, 78.2, 78.8, 79, 79.7, 80, 80, 80.2, 80.2, 80.4, 80.7, 80.9, 81.2, 81.2, 81.2, 81.3, 81.3, 81.5, 81.5, 81.7, 81.8, 81.9, 82, 82, 82.3, 82.7, 82.7, 82.8, 82.9, 83, 83, 83, 83.1, 83.2, 83.3, 83.5, 83.5, 83.5, 83.7, 83.7, 83.7, 83.9, 83.9, 84, 84.1, 84.2, 84.3, 84.3, 85, 85, 85, 85.1, 85.3, 85.5, 85.6, 85.7, 85.7, 86, 86.9, 86.9, 87.1, 89.5
Washington University School of Medicine	(1933)	85, (1936) 77.7, 78.5, 84.2, (1937) 75, 75.4, 77.8, 78, 78.3, 79, 79, 79.2, 79.2, 79.2, 79.3, 79.6, 79.6, 79.7, 79.9, 79.9, 80.2, 80.3, 80.4, 80.5, 80.6, 80.9, 81, 81.1, 81.2, 81.5, 81.5, 81.8, 82.5, 82.5, 82.5, 82.6, 82.6, 82.7, 83, 83, 83, 83, 83.3, 83.5, 83.6, 83.7, 83.7, 83.8, 84.2, 84.2, 84.2, 84.2, 84.2, 84.3, 84.4, 84.5, 84.8, 84.9, 85, 85.1, 85.2, 85.2, 85.2, 85.3, 85.7, 86.5, 87.5, 87.8, 91.3
University of Pennsylvania School of Medicine	(1936)	81.3
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg	(1920)	77.8†

FAILED

School	Year Grad.
Rush Medical College	(1937)
St. Louis University School of Medicine	(1936), (1937, 5)
Washington University School of Medicine	(1937, 4)
Meharry Medical College	(1935)

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

† Verification of graduation in process.

Book Notices

The Endocrines in Obstetrics and Gynecology. By Raphael Kurzrok, Ph.D., M.D., Associate in Obstetrics and Gynecology, the College of Physicians and Surgeons, Columbia University. Cloth. Price, $7.50. Pp. 488, with 178 illustrations. Baltimore: Williams & Wilkins Company, 1937.

This book, by a well known investigator who has contributed original and valuable studies to clinical endocrinology, is divided into two parts of unequal merit. Approximately half is devoted to the physiology and chemistry of endocrine substances and the remainder to clinical applications and special clinical phenomena. The former shows unmistakable evidences of haste and carelessness in compilation of data, writing and proofreading; the latter is much more adequately written and reflects a mature and critical analysis of clinical problems.

Only a few deficiencies need be selected for detailed consideration. The author uses several systems of nomenclature for a single group of substances and different spellings of the same terms interchangeably. Occasionally some designations are used incorrectly. Estrin, estrone and folliculin are used synonymously. Estrone, a specific crystalline compound, ketohydroxy estratriene, is repeatedly used in the text as a generic term for estrogens in general. "Oestrogenic" and "estrogenic" appear in successive sentences. "Estrin" often becomes "oestrin." The reader is told that estrone is "found in the ovaries, blood and excreta of all vertebrates," in "protozoa, coelenterates, worms, anthropodes [arthropods?] . . . seeds, potatoes, female willow catkins . . . lignite . . . petroleum." Actually estrone (theelin) has been isolated and identified only in the urine of pregnant women and in that of mares and stallions. Estrogenic substances are widely distributed in nature, but these have not all been identified as estrone. In fact it is doubtful whether some of them are even closely related to estrone.

The author states "It is well known in chemotherapy that an alcohol is more active than a ketone . . . ," a thesis of dubious general validity. Even the example cited, the greater estrogenic activity of estradiol as compared with estrone, is of only limited significance, as this greater potency holds only for certain species such as the rat. The name suggested by Hisaw for the progestational principle of the corpus luteum is stated to be "relaxin." The latter is a term proposed by the aforementioned worker for another substance in the corpus luteum that relaxes the pelvic ligaments in certain species of animals (as indeed the author himself recognizes in a subsequent section). Hisaw coined the name "corporin" for the progestational factor.

Typographic errors abound. The most common appears to be the interchangeable use of an amusingly large triangle and the Greek letter Δ (used in chemistry to represent double bonds) in the formulas for the steroids. In addition, author and typographer were apparently unable to decide whether the numbers indicating the locations of the double bonds should be superior or inferior or in large type on the line.

In the section on the corpus luteum one finds no mention of the work of Leo Loeb. In that on the isolation of epinephrine, the name of John J. Abel does not occur. The investigations of Hanson on the parathyroid are similarly omitted.

It is disconcerting to find a statement that "the gonadotropic hormones are found only in the adenohypophysis, and in no other gland of internal secretion," and in a subsequent section a contradictory admission of the well known fact that the placenta (also an organ of internal secretion) is rich in gonadotropic substance.

Despite such errors as these, which it is hoped the author will correct in subsequent editions, the part of the book devoted to clinical problems (such as physiologic reactions of the human uterus, the alleged safety of the "safe period," menstrual disturbances and sterility) should be useful to those who treat gynecologic disturbances. The text contains numerous illustrations, excellently reproduced.

L'anaphylaxie: Expérimentale et humaine. Par Pasteur Vallery-Radot, G. Mauric et Mme. Holtzer (ex-Hugo). Paper. Price, 36 francs. Pp. 130, with 25 illustrations. Paris: Masson & Cie, 1937.

This short monograph is a summary of the work on anaphylaxis by Pasteur Vallery-Radot and his associates since 1929. The five pages of references are exclusively of the latter authors. The work, of an experimental and clinical nature, embodies some of the well known facts in anaphylaxis and allergy. Briefly stated, anaphylaxis in animals (rabbits used) is always induced and is characterized by clinical shock, prolonged fall in blood pressure, vasoconstriction (peripheral and mesenteric vessels) and a decreased coagulability of the blood. In man, induced anaphylaxis is rare (as after therapeutic administration of horse serum). However, the author classifies the various allergic manifestations in man as spontaneous anaphylaxis, notwithstanding the fact that the criteria given for anaphylaxis in animals are never seen in the allergic states of man. He recommends intradermal skin tests or the Prausnitz-Küstner reaction in the diagnosis of allergic states and has found clinically that daily intradermal injections of cutaneous test doses over periods of months is of greater value in desensitization than weekly or biweekly intradermal or subcutaneous injections. He does not believe that a true desensitization is ever accomplished in man. The monograph will appeal more to those interested in the experimental phase of allergy than to those engaged in its clinical application.

Emanotherapy. By F. Howard Humphris, M.D., F.R.C.P., D.M.R.E., Honorary Consulting Radiologist to, and Member of, the Medical Advisory Board of St. John Clinic and Institute of Physical Medicine, London, and Leonard Williams, M.D. Cloth. Price, $3. Pp. 188, with 6 illustrations. Baltimore: William Wood & Company, 1937.

The term emanotherapy is used here to include the treatment of widely differing pathologic conditions, except malignant conditions, with small amounts of radon in such forms as drinking water, baths and muds. This form of treatment is here referred to as emanotherapy in order to differentiate it from treatment in which radium salt is used. The author definitely emphasizes the fact that he refers only to treatment with radium emanation and never to treatment with radium salts. Furthermore, nothing in this book concerns itself with the application of radon in concentrated form, as it is used for local treatment of malignant diseases. Therefore, all objections which arise from the knowledge of the danger of repeated administration of radioactive salts are at once eliminated. The scope of the book is limited to the use of small amounts of radon in the different types of treatment already mentioned.

Since radon has a short life span, all preparations of this type deteriorate with relative rapidity. The gas is eliminated quickly, particularly through the lungs. The blood has only a certain power of absorption of this gas and the excess is also rapidly eliminated here. The danger of accumulation, therefore, which is always present in treatment with radium salts, is absent in all types of treatment with radon.

After an introductory chapter giving the history of emanotherapy, the scientific literature on the effect of such treatment

is surveyed. In two chapters on technical considerations the different procedures for the administration of this treatment are discussed: treatment by inhalation, by ingestion of radioactive water, by cutaneous application with pads and compresses as well as with creams and pomades and radioactive baths and muds, subcutaneous injection, insufflation into the rectum and the vaginal douche.

In the following chapter the clinical indications for the various clinical specialties are considered: gout and rheumatism, gynecology, otorhinology and dermatology. In a special chapter the treatment with muds is discussed, particularly from the point of view of whether the radiating energy is the most effective factor in this type of treatment. The authors answer this question in the affirmative. Some less common indications for the use of emanotherapy are discussed extensively in a separate chapter.

The book has been written with the purpose of spreading the knowledge of the clinical application of emanotherapy in Great Britain, where, in contradistinction to many countries and particularly those on the European continent, this treatment is not very popular. From this point of view the book is a convenient guide. However, one might wish for a more critical survey of the subject. It should be remembered that certain of the natural spas known for their curative effects in certain pathologic conditions have an emanation content below the threshold of physiologic efficiency. Yet it has been the experience of some of the most prominent clinicians that the use of these waters is considerably more effective than treatment with artificial radioactive substances or solutions, even though these artificial agents may contain a much higher amount of radioactive material. Therefore, while the radioactivity may have a certain part in the action of these therapeutic agents, there are certainly many other effects encountered in these results which may be explained by other factors, such as temperature. When one considers the beneficial effects of mud compresses, which contain only infinitesimal amounts of radioactivity, there is a great question as to whether such beneficial effects are due to the radioactive materials or to some other factor.

This book fills a definite gap in that it gives a convenient source of information covering the whole field dealing with this type of treatment, with competent explanations of the physical and biologic problems involved.

A bibliography is appended to each chapter.

The Control of Tuberculosis in England Past and Present. By G. Gregory Kayne, M.D., M.R.C.P., D.P.H., Deputy Medical Superintendent, County Sanatorium, Clare Hall, Middlesex. With foreword by Sir Humphry Rolleston, Bart, G.C.V.O., K.C.B. Cloth. Price, $3. Pp. 188. New York & London: Oxford University Press, 1937.

This book deals with the whole problem of tuberculosis control in England. The first part includes treatment and prevention before 1908. While the cause of the disease was known, this was before the present method of administering the tuberculin test intracutaneously was employed. Moreover, artificial pneumothorax was not used in England at that time. The hospital and sanatorium situation prior to 1908 is presented in considerable detail, as well as the high mortality from the disease. In the second part such subjects as reporting of cases of tuberculosis and various acts, such as the National Insurance Act and the Local Government Act, are presented. One chapter is devoted to control of tuberculosis before the Great War, another to control during the war, and a third to progress in control since the Great War. Part III contains an excellent discussion of the present day tuberculosis problem in England. Tables are presented showing the decrease in mortality. The author presents a most modern point of view with reference to control of tuberculosis among children by emphasizing the importance of protecting them against communicable cases of the disease. He calls attention to the fact that the bovine type of tubercle bacillus as a cause of pulmonary tuberculosis is not as rare as was formerly believed; in fact, in children he estimates that 25 per cent of the deaths from all forms of tuberculosis can be attributed to the bovine type of tubercle bacillus. Such facts should cause every physician in the United States to appreciate more than ever before the value of the work of veterinarians in controlling tuberculosis among cattle. The author believes that every attempt should be made to prevent tubercle bacilli of both human and bovine types from entering the bodies of children as long as possible. He calls attention to the fact that many persons now reach adult life without tuberculous infection and that every effort should be put forth to protect adults against exposure. The importance of the intracutaneous tuberculin test is emphasized for both children and adults. He thoroughly appreciates the value of the x-ray film in locating areas of disease and determining more accurately their extent than can be done by any other method. With reference to the detection of activity of the tuberculous lesion, he says "Radiology has not reached the stage at which the degree of activity of the lesion may be judged with any degree of accuracy, but it has demonstrated the existence of latent lesions which may recrudesce."

In the section on treatment, collapse therapy is given an important place. Although there exists in England a difference of opinion as to whether artificial pneumothorax should be instituted in the absence of pulmonary cavities, the author states that, since artificial pneumothorax may lead to considerable shortening of institutional treatment, enables patients to carry on with their work while under treatment and is the most rapid method of rendering a patient noncontagious, he definitely appears to favor its adoption even in the noncavernous cases in the working classes. In the prevention of tuberculosis, the chief emphasis is placed on finding, treating or isolating persons with tuberculosis in communicable form. Considerable emphasis is placed on open-air schools, preventoriums and special buildings on sanatorium grounds for infected children. This is contrary to the present trend in the United States, where such institutions for children who do not have clinical disease are being abolished. It is gratifying to see emphasis placed on the rôle of the general practitioner in the tuberculosis control program. This book contains much valuable information and should be available to all physicians engaged in any phase of tuberculosis work.

Modern Psychology in Practice. By W. Lindesay Neustatter, B.Sc., M.B., B.S., Clinical Research Assistant to the Dept. of Psychological Medicine, Guy's Hospital. With a foreword by R. D. Gillespie, M.D., F.R.C.P., D.P.M., Physician in Psychological Medicine, Guy's Hospital. Cloth. Price, $3.75. Pp. 299. Philadelphia: P. Blakiston's Son & Co., Inc., 1937.

This book, by a London psychiatrist, is an introduction to the psychology of the commoner mental disorders. A brief introduction to general psychopathology is followed by an even briefer rapid review of the chief concepts used by the several "schools of thought," such as the freudian and the adlerian. Children's disorders are presented from a pediatric rather than a psychiatric point of view. Here a wide field is sketchily outlined, the discussion including problems of anxiety in children, behavior problems, speech disorder, mental defect and methods of treatment. The commoner neurotic disorders and psychoses among adults are discussed. A section on methods of treatment gives the author's personal experience in treatment approaches, based primarily on psychoanalysis. A concluding general section on psychology and general medicine discusses psychologic aspects of asthma, rheumatism, cardiac disturbances and other common conditions. Causation and prophylaxis curiously are treated at the end of the book. The volume should be useful to physicians and medical students who wish to acquaint themselves with current thinking in the field of medical psychology and psychotherapeutics. The author, a physician at Guy's hospital, was formerly a commonwealth fellow in child psychiatry and is well oriented in his field. The book is written frankly as representing the author's own reaction to current teaching and reflects his own clinical experience. Necessarily much of the discussion is too fragmentary and sketchy to be of great use to the physician who wishes to prepare himself for actual clinical work with mentally disturbed patients, but the book should be of great value to the general practitioner in aiding him to a helpful approach to such patients in the course of general practice. The author's special emphases in treatment approaches appear to be unduly colored by stekelian influence. Specialists in the various schools of psychotherapeutics will differ with the author in many details but will recognize the validity and general soundness of his treatment approaches. The book is much more readable, much more understandable and much more authentic than most books on medical psychology written for

laymen and medical students. A felicitous style, clear language and a ready wit, rare in medical writings, enliven the book and give one the impression that, whatever the merits or deficiencies of the author's particular views, doubtless he is an excellent psychotherapist and is willing to tell how he does it and what he thinks about his work. Medical students should read this book.

Das Serumeisen und die Eisenmangelkrankheit (Pathogenese, Symptomatologie und Therapie). Von Ludwig Heilmeyer, Oberarzt der Medizin. Univ.-Klinik Jena, und Kurt Plötner, Assistenzarzt der Klinik. Paper. Price, 6 marks. Pp. 92, with 22 illustrations. Jena: Gustav Fischer, 1937.

The determination of serum iron has always presented technical difficulties which have been an obstacle to the thorough study of the iron deficiency state. This monograph concerns itself with not only the pathogenesis, symptomatology and treatment of conditions associated with iron deficiencies but also with methods for iron determination. The authors give a detailed description of their method in the first part of their monograph. The values for a small group of normal men and women are given and no direct relationship was found between the hemoglobin content of their blood and serum iron. Following the discussion on technic are clinical observations on acute and chronic posthemorrhagic anemias, primary hypochromic anemia, hemolytic anemia, leukemia, polycythemia vera and postinfectious anemias. The serum iron in tuberculosis and rheumatic fever is next discussed. The authors then discuss the metabolism of iron in normal and pathologic states. Treatment of the iron deficiency states conclude the monograph. The text is frequently illustrated by graphs and charts but the bibliography is glaringly deficient in pertinent references. While the material presented by the authors is a contribution to the work in this field, it is by no means of monographic scope. Furthermore, the author's clinical observations are inadequately controlled.

Physical Aspects of Radium and Radon Therapy. By Dr. C. E. Eddy, F. Inst. P., Physicist-in-charge, and Mr. T. H. Oddie, M.Sc., A.Inst.P., Physicist, of the Commonwealth X-Ray and Radium Laboratory, University of Melbourne. Commonwealth of Australia, Department of Health. Paper. Pp. 60, with 14 illustrations. Camberra, F. C. T., [n. d.].

This useful pamphlet has been prepared by several Australian physicists and is distributed by the government to those working with radium. It contains a clear summary of the most important phases of our knowledge of the physics of radium, of the methods of placing radium and radon in the containers, size and construction of these containers, tables of the decay of radon, a discussion of the advantages and disadvantages of radon as compared to radium, and of the conditions governing the issuance of government radium to hospitals, approved medical practitioners and research workers. The Australian Department of Health owns 10 Gm. of radium and the report suggests that where radium is to be distributed it is best used in the form of radon. No instructions are given for the clinical application of these two forms of radiation.

Chronic Miliary Tuberculosis. By Clifford Hoyle, M.D., M.R.C.P., Assistant Physician to the Hospital for Consumption and Diseases of the Chest, Brompton, and Michael Vaizey, M.B., M.R.C.P., Medical First Assistant and Registrar, London Hospital. Cloth. Price, $4.25. Pp. 140, with 18 illustrations. New York & London: Oxford University Press, 1937.

In this book the authors present 110 cases of chronic miliary tuberculosis selected from the literature and ten additional cases which they are reporting for the first time. All 120 patients lived three months or more after the disease was recognized. Attention is called to Waller's statement in 1845 to the effect that persons suffering from miliary tuberculosis might recover and also to examples which Wunderlich presented in 1860. Since that time numerous cases have been reported but in many the evidence was not found to be sufficient to justify their inclusion in this monograph. The authors present their personal series of ten cases in considerable detail with reference to clinical manifestations, x-ray and laboratory observations and morbid anatomy. Under treatment they state that the disease may heal completely and the patient may remain well. They believe that formerly such patients were given prolonged and unnecessary hospital or sanatorium treatment on the basis of persistent shadows on the x-ray film. They describe another group of cases in which the disease advances steadily and is not unlike acute miliary tuberculosis except that the patients live a little longer. For this group treatment is of no avail except that which brings about relief from symptoms. For the intermediate group they recommend rest and suggest partial bilateral artificial pneumothorax, although this has not been attempted. However, in one case in which the miliary tuberculosis was unilateral they did institute artificial pneumothorax. Two patients who were treated with sanocrysin recovered, while three others did not respond; three patients treated with tuberculin showed no improvement. Various other methods of treatment, such as heliotherapy and splenectomy, are discussed. This monograph contains a good presentation of the subject, with a list of 217 references, seven tables, and eighteen illustrations made from x-ray films of the chest and pathologic specimens.

A Text-Book of Medical Bacteriology. By R. W. Fairbrother, D.Sc., M.D., M.R.C.P., Lecturer in Bacteriology, University of Manchester. Cloth. Price, $4.50. Pp. 437, with 17 illustrations. St. Louis: C. V. Mosby Company, 1937.

The author states that this book is an outline of the medical aspects of bacteriology. With this aim it of necessity straddles the two fields and is unable therefore to do complete justice to either bacteriology or medicine. As an example of its partial inadequacy from a bacteriologic standpoint is the omission of any description of the Barber single cell method of isolating bacteria in the discussion of pure cultures. Certain advantages, however, are evident. Chemotherapy with sulfanilamide for streptococcic infections is mentioned briefly but is already out of date. With the admirable brevity often characterizing the English textbooks, the author has been able to discuss general bacteriology from the standpoints of biology, infection, immunity and so on, systematic bacteriology including the more important bacterial diseases, filtrable virus, bacteriophage and the bacteriology of water, milk and shell-fish. Finally there are three chapters on technic which might well be placed perhaps in a laboratory manual rather than in a textbook of this sort. In an attempt to simplify the reading matter, the author has not cited specific references in the body of his material, the end of the chapters, or the general index. This is an omission which will make the book practically useless as a starting point for more detailed investigation of various subjects. Furthermore, the index is brief and could well be expanded in future editions.

Manual of the Diseases of the Eye for Students and General Practitioners. By Charles H. May, M.D., Consulting Ophthalmologist to Bellevue, Mt. Sinai and French Hospitals, New York. Fifteenth edition, revised with the assistance of Charles A. Perera, M.D., Instructor in Ophthalmology, College of Physicians and Surgeons. Medical Department of Columbia University, New York. Cloth. Price, $4. Pp. 498, with 376 illustrations. Baltimore: William Wood & Company, 1937.

The standard nature of this textbook is readily apparent from the fact that this is the fifteenth edition since 1900 and that there are British, Spanish, French, Italian, Dutch, German, Japanese and Chinese editions as well. The last previous American edition appeared in August 1934 and was reprinted in August 1936. The author states in the preface that the chapters on the ophthalmoscope and the ocular manifestations of general diseases have been rewritten and that much new information has been included on the subjects of operations on the lids and the retina. Obsolete matter has been deleted, with the highly desirable result that in spite of the advances in knowledge in this field there has been little increase in the size of the book. This edition remains an excellent introductory textbook for medical students and a source of convenient reference for those physicians who are not specializing in diseases of the eyes.

Chemie der Inkrete und ihre wichtigsten Darstellungsmethoden. Von Dr. Kurt Maurer, a. o. Professor für Chemie an der Univ. Jena. Band I, Zwanglose Abhandlungen aus dem Gebiete der Inneren Sekretion. Herausgegeben von Professor Dr. W. Berblinger. Paper. Price, 7.20 marks. Pp. 67. Leipzig: Johann Ambrosius Barth, 1937.

This is a brief dissertation on the chemistry of estrogens, androgens, progesterone and related steroids, insulin, epinephrine, adrenal cortical principles, thyroxine, hypophysial and parathyroid principles and the so-called circulatory hormone occurring in the pancreas and the urine. Those who desire a "bird's eye" view of the subject will find this treatise useful.

Report of the Advisory Council, Science Museum, Board of Education, for the Year 1936. Paper. Price, 1s. 3d. Pp. 51, with 6 illustrations. London: His Majesty's Stationery Office, 1937.

The Science Museum of London does not include medicine or the medical sciences as a unit. Since many physicians are interested in the basic sciences, however, there is much of interest to him in the museum. Among the new exhibits listed for 1936 might be mentioned those on smoke abatement and sewage disposal.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Pharmacists: Liability for Injuries Attributed to Preparation Sold as a Wart Remover.—The plaintiff sued the defendant drug company, attributing certain injuries he sustained to the use of a preparation sold him by an employee of the company as a wart remover. The trial court gave judgment against the plaintiff and he appealed to the court of appeals of Georgia, division 1.

The preparation purchased by the plaintiff was in a bottle and the directions pasted thereon advised the purchaser to apply the lotion to the "affected parts four times a day." The plaintiff alleged that he carried out these directions and applied the preparation to his wart four times daily for about ten days; that soon after he began using it the wart turned black, and his hand began to swell and became inflamed and infected, causing him great physical pain and mental anguish. Finally, it was alleged, a skin cancer developed. These results, it was contended, were caused "proximately and solely by the said preparation sold to him by the said defendant," being due to some harmful and dangerous ingredient contained in the preparation. When the case came to trial, however, the plaintiff failed to prove that the preparation sold to him contained a harmful and dangerous ingredient. The trial court, therefore, properly granted a nonsuit, said the court of appeals. If the allegations that the preparation contained a harmful and dangerous ingredient were true, that fact could have been sustained by proof of a chemical analysis of it. In the absence of any such proof, the plaintiff failed to substantiate his allegations. The judgment for the defendant was affirmed.—*Brewer v. Knight Drug Co., Inc. (Ga.), 190 S. E. 365.*

Workmen's Compensation Acts: Cerebral Hemorrhage and Ensuing Paralysis Attributed to Excitement.—The claimant, a Negro 50 years old, hit a man while driving a truck in the course of his employment. He became highly nervous and excited, slumped over the steering wheel and was taken from the truck to a hospital, paralyzed in his right side. For the ensuing disability, he sought compensation under the workmen's compensation act of Maryland. The industrial commission denied him compensation, the Baltimore city court reversed the commission's finding, and the employer appealed to the Court of Appeals of Maryland.

The physical condition of the claimant before the accident was not good. According to the testimony of expert witnesses who testified for him he had an excessive blood pressure and a premature hardening of the arteries. If he had suffered a paralysis while napping or while uneventfully driving his truck in the course of his employment, the paralysis occurring would have been a natural and probable result of his impaired physical health and would have possessed none of the essentials of an accidental happening. The disease, or malady, however, did not run its natural and anticipated course. The claimant was precipitated into paralysis as the result of an accident. The sudden and unexpected action of a man riding a truck ahead of the claimant made it necessary for the claimant quickly to turn his truck in an effort to avoid striking him. Between the beginning of his excitement, when the man jumped into the way of his truck, and the shock of the truck's collision with the man's body, the paralysis happened. So far as the claimant is concerned, the court said, all the elements of unintention, unexpectedness, and happening by chance, concur in making the occurrence an accident. In the opinion of the court, there was no fundamental difference in law or in principle between an injury causatively resulting from a blood vessel being cut or crushed and one ruptured by an artificial distention of that blood vessel from fright, apprehension or exertion directly and proximately a consequence of an accidental event.

If an employee, while at work, suffers or is made ill from natural causes, the condition is not accidental since it is a natural result or consequence which is normal and to be expected. If, however, there is a subsisting illness or disability which is caused or accelerated by some act or event coming by chance or happening fortuitously, then the resulting condition is considered as having been caused by an accident. It is not necessary for the accidental quality or condition to be given or created by a wound or by external violence.

The court concluded, therefore, that the claimant had suffered an accidental injury arising out of and in the course of his employment. The judgment of the lower court in effect awarding compensation to the claimant was affirmed.—*Geipe, Inc. v. Collett (Md.), 190 A. 836.*

Workmen's Compensation Acts: Implied Consent of Employer to Physician Selected by Employee.—The Oklahoma workmen's compensation act requires an employer to provide promptly for an injured employee such medical and other treatment and care as may be necessary during sixty days after the injury or for a longer period if necessary in the judgment of the commission. If the employer fails or neglects to provide such treatment within a reasonable time after knowledge of the injury, the injured employee, during the period of such neglect, or failure, may procure the necessary treatment at the expense of the employer.

Under this statute, said the Supreme Court of Oklahoma in *Oklahoma Utilities Co.* v. *Johnson,* 66 P. (2d) 10, it is not necessary, in order to render an employer liable therefor, for the employee to request the employer to furnish medical aid, if the employer has notice of the injury and the necessity for medical attention. If the employer has knowledge of the fact that the employee has retained his own physician and responsible officials of the employer visit the employee without making any objection to the physician selected or suggesting some other one, the employer will be deemed to have impliedly consented to the arrangements made for the necessary medical attention.

A somewhat similar holding was reached by the Supreme Court of Oklahoma in *United States Casualty Company* v. *Steiger,* 66 P. (2d) 55. There the court said that an employer should be given an opportunity after having knowledge of the injury to furnish the medical attention and select his own physician and where he has done so the employee should accept such service. But if the employer knows that an employee has selected his own physician and does nothing toward providing a physician of his own choice or indicating a dissatisfaction in the choice of the employee, he will be deemed to have consented to such selection as though the physician were selected by the employer.—*Oklahoma Utilities Co. v. Johnson (Okla.), 66 P. (2d) 10; United States Casualty Co. v. Steiger (Okla.), 66 P. (2d) 55.*

Health Insurance: "Totally Disabled" Defined; Admissibilty of Medical Expert Testimony.—Forrester and Raney, as members of the Brotherhood of Locomotive Firemen and Enginemen, had received benefits prior to 1933 for total disabilities caused by tuberculosis. In 1931 the Brotherhood amended its constitution so as to define "total and permanent disability" as "a state of bodily incapacity as shall wholly and permanently prevent a member from engaging in any occupation, profession or business, or from performing or directing any work for remuneration or profit. . . ." In 1933 the brotherhood refused to pay further benefits on the ground that Forrester and Raney were no longer totally and permanently disabled within the meaning of the new constitution even though, in the opinion of physicians, they had tuberculosis in the active stage and were unable to perform physical labor without endangering their health and lives. Forrester and Raney later instituted separate suits against the brother-

hood to recover additional benefits. From judgments in favor of the plaintiffs, the brotherhood appealed to the court of civil appeals of Texas, Austin.

In the opinion of the court of civil appeals, the trial courts had not erred in giving the following instructions:

> 'totally disabled' . . . does not imply an absolute impossibility to perform any work. A person is totally disabled when his physical condition is such that he is unable to perform or direct any work without injury to his health, and when common prudence and the exercise of ordinary care would require him to desist from the performance of his duties.

An insurer, said the court, has the right to place such reasonable restrictions and conditions on its liabilities as it may see fit. However, when it attempts to define such limits by using relative terms whose meaning cannot be prescribed with factual exactitude, such terms must be given the meaning and interpretation placed on them in the adjudicated court decisions.

On appeal of the suit instituted by Raney, the court set forth certain cardinal principles relative to the admissibility of medical expert testimony. Statements, said the court, made by a patient to his physician as to subjective symptoms for the purpose of qualifying such physician to testify, and not for purposes of treatment, are inadmissible in evidence, and testimony as to a diagnosis based on such statements or medical history is likewise inadmissible. However, the testimony of a physician as to a diagnosis made by him from objective symptoms and from his own examination of the patient, independent of what the patient may have told him, is not inadmissible even though the patient may have made self-serving declarations to him.

Accordingly, the court of civil appeals held that the plaintiffs were totally and permanently disabled and affirmed the judgments in their favor.—*Brotherhood of Locomotive Firemen and Enginemen v. Forrester (Texas), 101 S. W. (2d) 860; Brotherhood of Locomotive Firemen and Enginemen v. Raney (Texas), 101 S. W. (2d) 863.*

Harrison Narcotic Act: Administration of Narcotics as Constituting a Sale; Entrapment of Physician.—Ratigan was convicted in the district court of the United States for the western district of Washington, northern division, for selling morphine by means of hypodermic administration, and not in pursuance of an order on a form issued by the Commissioner of Internal Revenue. *United States* v. *Ratigan,* 7 F. Supp. 491, abstr. THE JOURNAL, May 4, 1935, page 1665. He thereupon appealed to the United States circuit court of appeals, ninth circuit.

The indictment under which Ratigan was convicted charged that he "did feloniously sell morphine . . . by means of hypodermic administration . . . not in the course of the professional practice . . . or in good faith, or for legitimate medical purposes . . . merely for the purpose of gratifying his (purchaser's) craving for the drug . . . not in pursuance of a written order . . . on a form issued in blank for that purpose by the Commissioner of Internal Revenue . . ." Ratigan first contended that the indictment did not charge an offense under the law. With this contention the circuit court of appeals disagreed. The essence of "sale" is, the court said, a transfer of the property in a thing for money. That the narcotics administered by Ratigan constituted property may not be questioned. The delivery or transfer of the narcotics by Ratigan hypodermically to the buyer and payment for this hypodermic injection were not challenged. The transaction, therefore, had all the component parts of a sale. A sale is complete when the drug is delivered whether hypodermically into the human system by request of the buyer or delivered elsewhere on his direction. It does not need to be personally handled by the buyer. The allegation in the indictment, continued the court, that the sales were made "not in the course of the professional practice of [appellant], or in good faith, or for legitimate medical purposes, he, the [purchaser] being free from any disease in which morphine is indicated for legitimate medical purposes, and receiving same, as aforesaid, from [appellant] merely for the purpose of gratifying his craving for the drug," sufficiently negatived the exception contained in the Harrison Narcotic Act providing that nothing contained in it should apply to the dispensing to a patient by a physician in the course of his professional practice only.

There was no entrapment in the case, in the opinion of the court. Ratigan was not led into a situation where he committed the act innocently. The stool pigeons merely presented themselves to Ratigan and solicited the drug; there was no decoy solicitation or conduct. What Ratigan did was his free, voluntary act, the stool pigeons affording the opportunity for the sale of the drug. The defendant admitted administering from eighty-eight to 100 treatments daily, averaging approximately 4 grains, more or less, each, and that he purchased, during 1935, 194,000 one-half grains, or 97,000 grains of the drug. The evidence indicated, the court said, that Ratigan administered 29,720 grains not purchased on order blanks. The judgment of conviction was therefore affirmed.—*Ratigan v. United States, 88 F. (2d) 919.*

Accident Insurance: "Total and Permanent Disability" Defined.—The defendant insurance company promised to pay certain benefits to the plaintiff if he sustained an accidental injury that would "wholly and continuously disable the insured from transacting any and every kind of business pertaining to any occupation." As the result of an automobile accident, the plaintiff lost the use of his right hand and arm and was thereafter unable to perform the manual duties connected with his customary occupation as a distributor of beer by truck. He did, however, continue his business by employing and supervising help and was thus able to prosper. He later sued the defendant insurance company claiming that he had become totally and permanently disabled. From a judgment in his favor, the insurance company appealed to the Supreme Court of Arkansas.

Clauses similar to the one in the insurance policy in question, said the Supreme Court, have been construed by this court to mean that an insured is totally and permanently disabled when the injuries received prevent him from performing or executing all the substantial and material acts of his business in the usual and customary way. In the opinion of the court, the jury was warranted in finding from the evidence that the plaintiff had become totally and permanently disabled within the meaning of the clause in question. He was no longer able to drive his truck and load and unload the same in person, which were material and substantial acts in conducting the business of distributing beer. The court also pointed out that as a result of his injury he was no longer able to perform the duties necessary in the operation of a steam shovel, repairing automobiles and doing carpenter work, which were the only other occupations he had been trained to follow.

Accordingly, the Supreme Court affirmed the judgment in favor of the plaintiff.—*Monarch Life Ins. Co. v. Riddle (Ark.), 101 S. W. (2d) 781.*

Hospitals: Liability of Charitable Hospital for Injury to Pay Patient.—A pay patient in a hospital, said the court of appeals of Georgia, division 2, classified and operated primarily as a charitable institution, who is injured through the negligence of the hospital, may recover damages from the hospital for such injuries although the recovery will be restricted to the income derived from pay patients or other noncharitable sources.—*Robertson v. Executive Committee of Baptist Convention (Ga.), 190 S. E. 432.*

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, Los Angeles, Jan. 16-20. Dr. Carl E. Badgley, 1313 East Ann St., Ann Arbor, Mich., Secretary.

American Society of Tropical Medicine, New Orleans, Nov. 30-Dec. 3. Dr. N. Paul Hudson, Dept. of Bacteriology, Ohio State Univ., Columbus, Ohio, Secretary.

Society for the Study of Asthma and Allied Conditions, New York, Dec. 11. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.

Society of American Bacteriologists, Washington, D. C., Dec. 28-30. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.

Southern Medical Association, New Orleans, Nov. 30-Dec. 3. Mr. C. P. Loranz, Empire Bldg., Birmingham, Ala., Secretary.

Southern Surgical Association, Birmingham, Ala., Dec. 7-9. Dr. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Western Surgical Association, Indianapolis, Dec. 3-4. Dr. Albert H. Montgomery, 122 South Michigan Blvd., Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

7: 145-180 (Oct.) 1937

Certain Phases of Pediatric Urology. H. W. McKay, Charlotte, N. C. —p. 145.
*Simple Cysts of the Ovary: Their Clinical Importance. E. V. Stabler, Greenville.—p. 150.
The Dietitian. Anna M. Tracy, Tallahassee, Fla.—p. 155.
Paget's Disease (Osteitis Deformans). M. Barfield-Carter, Birmingham. —p. 157.
The Old School and the New. S. Graves, University.—p. 163.

Simple Cysts of the Ovary.—Stabler selected ninety-three patients for his discussion because their symptoms seemed to relate directly to the ovary, both preoperatively and postoperatively. Follicular, luteum and retention cysts were generally the rule. All the patients had cystic ovaries that were diagnosed at the time of operation. Two symptoms were common to all cases: a boring type of pain in one or both sides, and an increase of pain at menstruation, of a bearing down type. Fifty-five patients had pain in the back, fifty-three had pain down the leg, fifty-eight had regular menstruation, twenty-three had irregular menstruation and thirty-seven had to go to bed because of pain at the menstrual period. His treatment was the resection of the ovary, removing all cystic tissue if as much as one sixth of the ovarian tissue could be left; removal of the entire ovary if the whole ovary was cystic; puncture of the cysts when only a few cysts were found. In all patients, when it was deemed advisable, who were more than 36 years of age, the entire ovary was removed if it was cystic, both ovaries if both ovaries were cystic. Postoperative results, which range from six years to four months, show freedom from pain in forty-seven cases, pain after operation that corresponded to the resected ovary in thirty-two cases, pain after operation that corresponded to the removed ovary in fifteen cases, and pain after operation believed to be due directly to the remaining ovarian tissue in twenty-three cases. The regularity of menstruation improved in thirty-three cases, menstruation was unimproved in seventeen cases, the menstrual cycle was shorter and the flow more moderate in sixty cases, forty-one patients were apparently improved and five were apparently unimproved. Recognition of, or the failure to recognize, the clinical importance of multiple follicular, luteum or retention cysts of the ovary may result in the success or failure of a major surgical procedure as far as the clinical results to the patient are concerned.

American Heart Journal, St. Louis

14: 383-514 (Oct.) 1937

Factors Affecting Vascular Tone. W. B. Cannon, Boston.—p. 383.
Studies in Pathology of Vascular Disease. M. C. Winternitz, R. M. Thomas and P. M. LeCompte, New Haven, Conn.—p. 399.
Hypertension Produced by Constriction of Renal Artery in Sympathectomized Dogs. N. E. Freeman, Philadelphia, and I. H. Page, New York.—p. 405.
Physiologic Effects of Extensive Sympathectomy for Essential Hypertension. E. V. Allen and A. W. Adson, Rochester, Minn.—p. 415.
Observations on Phlebitis. E. A. Edwards, Boston.—p. 428.
*Pathologic Basis for Intermittent Claudication in Arteriosclerosis. J. R. Veal, New Orleans.—p. 442.
Interpretation of Arterial Elasticity from Measurements of Pulse Wave Velocities: I. Effect of Pressure. J. M. Steele, New York.—p. 452.

Pathologic Basis for Intermittent Claudication.—Veal presents an analysis of the vascular changes, as demonstrated by arteriography, in forty-one cases in which intermittent claudication was the predominant symptom, and in all of which the basic vascular pathologic change was arteriosclerosis. In most cases other signs and symptoms of vascular degeneration were present in addition to the pain due to exercise, and in eight cases gangrene of one or more toes was also exhibited. There was a wide variation in the duration and severity of the pain due to exercise. In twenty-one cases there was complete femoral or popliteal (or both) obstruction at some part of one of the large trunks. In six cases there was a definite, marked narrowing of the lower femoral and the popliteal arteries, although in no instance was the obstruction complete. The collateral circulation in these cases varied considerably. In all the cases in which one or more of the large trunks was completely obstructed or markedly narrowed, there was diminution in the number of functioning muscular branches. This was particularly evident in the smaller branches, and some arteriograms showed large areas of muscle devoid of any small muscular branches. In fourteen cases the large vessels of the extremity were patent throughout their course and their lumens were within normal range. Sometimes their course was tortuous but there were no points of constriction or obstruction. Here the defect was in the small muscular branches. The single abnormality common to all these cases is the obstruction of the small muscular branches with their fine terminal twigs. The obliterative process may affect all the muscles of the extremity, or a single muscle, or even an isolated portion of some muscle. Further proof that it is the obliteration of these fine vessels which is responsible for the impairment of muscular function is supplied by repeated arteriographic studies on patients whose intermittent claudication has improved under treatment, in which there is an increase in the number and size of the fine terminal arteries, as well as an improvement in their distribution. It is the abnormal distribution of the blood supply and the inaccessibility of certain portions of the muscles which produce impaired nutrition.

American Journal of Anatomy, Philadelphia

61: 343-524 (Sept.) 1937

Normal and Interrupted Vascular Patterns in Intestinal Mesentery of the Rat: Experimental Study on Collateral Circulation. Helen Blanche Weyrauch, San Francisco, and C. F. De Garis, Oklahoma City.—p. 343.
Development of Mammary Gland of the Rat: Study of Normal, Experimental and Pathologic Changes and Their Endocrine Relationships. E. B. Astwood, C. F. Geschickter and E. O. Rausch, Baltimore.—p. 373.
Study of Effect of Experimental Stasis in Lymphatic Channels on Lymphocyte Content, with Especial Reference to Plasma Cells. H. E. Jordan and C. B. Morton, Charlottesville, Va.—p. 407.
Normal Human Ovum in Stage Preceding Primitive Streak (The Edwards-Jones-Brewer Ovum). J. I. Brewer, Chicago.—p. 429.
Effects of Estrin-Progestin Combinations on Endometrium, Vagina and Sexual Skin of Monkeys. F. L. Hisaw, R. O. Greep and H. L. Fevold, Cambridge, Mass.—p. 483.
Glomerular Elimination of Indigo Carmine in Rabbits. R. T. Kempton, P. A. Bott and A. N. Richards, Philadelphia.—p. 505.

American Journal of Clinical Pathology, Baltimore

7: 347-466 (Sept.) 1937

The Future of Pathology. R. R. Kracke, Emory University, Ga.—p. 347.
Specific Artificial Immunity in Tuberculosis. H. J. Corper, M. L. Cohn and A. P. Damerow, Denver.—p. 360.
Monilia Infection of Lungs (Bronchomoniliasis). K. Ikeda, Minneapolis.—p. 376.
Occurrence of Squamous Cell Carcinoma in Lining Epithelium of an Ovarian Dermoid Cyst: Brief Review of Literature. M. J. Fein and R. Hobart, Montclair, N. J.—p. 389.
*Hemolysis of Red Cells in Nephritis in Saponin Systems. F. J. C. Herrald and M. Pijoan, Boston.—p. 404.
Intracranial Arterial Aneurysms. N. Enzer and E. D. Schwade, Milwaukee.—p. 418.
Some Possible Effects of Nursing on Mammary Gland Tumor Incidence in Mice. J. J. Bittner, Bar Harbor, Maine.—p. 430.
Hematologic Observations on Bone Marrow Obtained by Sternal Puncture. P. Vogel, L. A. Erf and N. Rosenthal, New York.—p. 436.

Hemolysis in Nephritis in Saponin Systems.—Herrald and Pijoan consider the exact relationship of cell and serum components in standardized saponin systems. Their investigation proceeded along two lines: the hemolysis by saponin of washed red cells and the effect on hemolysis of serum from nephritic patients. The principle of the method they employed is that described by Ponder, in which the lysin (saponin) is added quantitatively to a known volume of washed red cells in saline solution, and the velocity of hemolysis noted. It was found that the serum of patients with glomerulonephritis has a marked inhibitory effect on hemolysis by saponin. The reason for this is not clear. Work is now being carried out to deter-

mine the relationships of the various lipoids and proteins in the serum to this phenomenon. It is conceivable that, if there are substances which affect the red cell membrane in any way altering their reaction to saponin, these substances may play a part in influencing red cell metabolism in disease.

American Journal of Diseases of Children, Chicago

54: 699-972 (Oct.) 1937

Periodic Accrediting of Households: Economical Auxiliary Method for Controlling Human Tuberculosis, Suitable for Use in Private Practice. C. A. Stewart, Minneapolis.—p. 699.
*Investigations on Hemophilia. W. M. Bendien and S. van Creveld, Amsterdam, Netherlands.—p. 713.
Stabilizing Effect of Increased Vitamin B (B_1) Intake on Growth and Nutrition of Infants: Basic Study. M. W. Poole, B. M. Hamil, T. B. Cooley and Icie G. Macy, Detroit.—p. 726.
*Relation of Increased Vitamin B (B_1) Intake to Mental and Physical Growth of Infants: Preliminary Report. Martha G. Colby, Ann Arbor, Mich.; Icie G. Macy, M. W. Poole, B. M. Hamil and T. B. Cooley, Detroit.—p. 750.
Rate of Apposition of Enamel and Dentin, Measured by Effect of Acute Fluorosis. I. Schour and H. G. Poncher, Chicago.—p. 757.
Human Passive Transfer Antibody: II. Neutralization of Antigen. W. M. Schmidt and V. W. Lippard, New York.—p. 777.
Osteodystrophia Fibrosa: Report of Case in Which Condition Was Combined with Precocious Puberty, Pathologic Pigmentation of the Skin and Hyperthyroidism, with Review of Literature. D. J. McCune and Hilde Bruch, New York.—p. 806.

Investigations on Hemophilia.—Bendien and van Creveld discuss the fact that in normal fresh plasma and serum a substance is present which exerts a coagulation-promoting influence on hemophilic plasma and blood. A method is described for precipitation of the coagulation-promoting substance from normal fresh serum by slight acidifying. A simpler method is also described, i. e., adsorption and elution, by which the coagulation-promoting substance can be obtained from fresh normal serum in a medium poor in proteins. By dissolving the coagulation globulin (which was precipitated from the serum by slight acidifying) in water or in physiologic solution of sodium chloride to which has been added 3 or 4 per cent of sodium carbonate, it can be dissolved in a volume which is ten times as small as the volume of the normal serum from which it has been prepared. The solution is free from cholesterol and lipoid phosphorus. The solutions as obtained by the method described showed an activity which was about five times as great as that of the fresh serum itself. These solutions remained active much longer than the serum itself when kept in the refrigerator. Oral, intramuscular or intravenous administration of the coagulation-promoting substance has been tried in three patients with hemophilia. In one patient the coagulation time had been kept repeatedly within normal limits for some days by an intravenous injection.

Relation of Vitamin B Intake to Mental and Physical Growth.—Colby and her co-workers made psychologic observations of the mental and physical growth of artificially fed infants who lived in their own homes and were cared for by their parents. At the initial observation in the growth clinic all the babies were 2½ months of age or less; the minimum age was 5 days and the average age 5½ weeks. An effort was made to determine the nutritive advantage to the health, the related growth-promoting phenomena and the bone-building value of supplementary amounts of vitamin B in the form of a water extract of rice polishings. Criteria for the estimation of the nutritive advantages were looked for in monthly medical examinations, according to which an increase of from 30 to 50 per cent in the intake of vitamin B appeared to produce more regular, though not consistently greater, growth in infants, as judged by the group averages of the various measurements. Increased amounts of vitamin B in the diet seemed to promote a more stabilized growth and greater nutritional stability. The general mental picture of the infants receiving increased amounts of vitamin B may perhaps be qualitatively summarized as one of slightly accelerated maturation in basic behavior patterns (except the sympathetic), augmented alertness in attention and perception phenomena and slightly accelerated adaptive behavior patterns (learning). All available data on vitamin B seem to indicate some close interaction in the infant between the metabolism and the development of external behavior. The nature of this interaction can be shown only by further and more highly controlled observations.

American Journal of Hygiene, Baltimore

26: 197-422 (Sept.) 1937. Partial Index

Study of Hetero-Allergic Reactivity of Tuberculin Desensitized Tuberculous Guinea-Pigs, in Comparison with Tuberculous and Normal Guinea-Pigs. Margaret W. Higginbotham, Baltimore.—p. 197.
The Incidence of Fungi in Various Disease Conditions. E. L. MacQuiddy and Elizabeth Pinkerton, Omaha.—p. 224.
Comparative Study of Various Methods for Cultivation of Tubercle Bacilli from the Blood. Mildred M. Galton, Baltimore.—p. 259.
Studies on Nature of Immunity to Intestinal Helminths: VI. General Résumé and Discussion. A. C. Chandler, Houston, Texas.—p. 309.
Age Resistance in Laboratory Rats to Infection with Strongyloides Ratti. A. J. Sheldon, Baltimore.—p. 355.
Effect of an Excess of Vitamin C on Natural Resistance of Mice and Guinea-Pigs to Trypanosome Infections. D. Perla, New York.—p. 374.
Relative Potency of Monovalent and Polyvalent Antimeningococcus Serums. Mary B. Kirkbride and Sophia M. Cohen, Albany, N. Y. —p. 382.
Comparison of Typhoid O and H Agglutinin Responses Following Intracutaneous and Subcutaneous Inoculation of Typhoid, Paratyphoid A and B Vaccine. R. M. Perry, Durham, N. C.—p. 388.
Satisfactory Method of Isolating Tetanus Organisms from Mixed Material. E. C. Gilles, Baltimore.—p. 394.
Study of Biochemical Reactions of Strains of Clostridium Tetani Isolated from Street Dust. E. C. Gilles, Baltimore.—p. 401.
Glycosuria and Intestinal Trichomonads in the Diabetic. J. Andrews and J. W. Landsberg, Baltimore.—p. 416.

American J. Obstetrics and Gynecology, St. Louis

34: 549-730 (Oct.) 1937

Vascular Factor in Toxemias of Late Pregnancy. N. J. Eastman, Baltimore.—p. 549.
Cardiac Functional Capacity as an Aid to Prognosis During Pregnancy. H. E. B. Pardee, New York.—p. 557.
Hypertension, Nephritis and Toxemias of Pregnancy. R. G. Douglas, New York.—p. 565.
*Incontinence of Urine in Female, Urethral Sphincter Mechanism, Damage of Function and Restoration of Control. W. T. Kennedy, New York. —p. 576.
Bissell Operation for Cystocele. H. Grad, New York.—p. 589.
Methods and Results of Treatment in Carcinoma of Cervix at the Memorial Hospital. W. P. Healy and E. L. Frazell, New York.—p. 593.
Analysis of 300 Consecutive Cases of Primary Cervical Repair. G. A. Wood, Syracuse, N. Y.—p. 606.
*Effect of Pregnancy on Malignant Tumors. F. R. Smith, New York.—p. 616.
Chemical Determination of Pregnancy by Visscher-Bowman Technic. C. Drabkin and S. Goldschmidt, St. Louis.—p. 634.
Effect of Estrin on Basal Metabolism Rate and Nervous Symptoms of Ovariectomized Women. Mary E. Collett, J. T. Smith and Grace E. Wertenberger, with collaboration of D. M. Harlor, Faith W. Reed and Sara J. Long, Cleveland.—p. 639.
Studies on Dried Blood Serum of Women. A. M. Hellman and G. Musa, New York.—p. 656.
Worth While Surgery in the New-Born. J. A. Harrar, New York.—p. 661.
Obstetric Analgesia with Acid Alurate in Rectal Ether Oil. H. C. Ingraham and J. A. Rosen, New York.—p. 672.
Clinical Experience with a New Ergot Alkaloid. J. E. Tritsch and K. H. Behm, New York.—p. 676.
Testicular Tubular Adenoma (Pick). J. R. Miller, Hartford, Conn.—p. 680.
Tetanus Associated with Criminal Abortion. G. G. Komaromy, Cleveland.—p. 687.

Incontinence of Urine in the Female.—Kennedy believes that the external sphincter exerts little force in preventing the escape of urine from the bladder; the normal internal involuntary sphincter alone may have sufficient power to prevent the escape of urine from the bladder. When the free involuntary internal sphincter is enhanced by the normal voluntary sphincter, the control is quite positive. He outlines an operation for the restoration of sphincter control. He describes the sphincter mechanism as made up of a free involuntary sphincter surrounding the inner third of the urethra, supported and enhanced by a voluntary sphincter composed of the anterior portions of the levator muscles, which unite in a median raphe beneath the urethra. The sphincter mechanism lies around and beneath the middle third, having more and stronger fibers in this location. A woman who has never had a labor but who begins to suffer a partial incontinence of urine due to loss of sphincter control may have had an incomplete union of the fibers composing the involuntary sphincter and the voluntary sphincter. Labor may injure (1) separately the involuntary sphincter by directly or indirectly causing it to be distorted and fixed to the ramus of the pubis, thereby markedly diminishing its function as a sphincter and (2) separately the voluntary sphincter by splitting its fibers parallel to the urethra in or adjacent to the median raphe and (3) conjointly at the same labor 1 and 2. Of

twenty-eight patients, twenty-six have had urinary control restored, one has an incontinence which may not be permanent and one has sufficient incontinence which may require a second operation.

Effect of Pregnancy on Malignant Tumors.—During the last ten years Smith collected fifty-four instances in which patients with malignant tumors also had one or more pregnancies occurring either simultaneously with the appearance of the tumor or following its treatment. He reviews this series to determine whether pregnancy had a detrimental effect on the malignant tumors. He concludes that pregnancy is detrimental and should be prevented in patients having unarrested malignant tumors. Growing malignant tumors may be temporarily retarded by pregnancy, but the growth is accelerated after the termination of the pregnancy. Pregnant patients with malignant tumors have a better prognosis if (1) the pregnancy is not interrupted, (2) the pregnancy follows treatment of the tumor rather than occurs simultaneously with it, (3) in patients becoming pregnant after the tumor therapy, more rather than less than two years has elapsed since the tumor therapy, (4) in the breast and nongenital groups the patient has not aborted, regardless of the time relationship of the pregnancy to the occurrence of the tumor and (5) the breast and genital tumors are treated before the end of the pregnancy. If the patient has aborted, there is some slight advantage in early over late abortion in the nongenital group, but a distinct disadvantage in the breast group and total. All groups fared better if abortion did not occur, regardless of the stage of the pregnancy when first seen. Abortion was especially disastrous to primigravid women, whereas both primigravid and multigravid women did about equally well if abortion had not occurred. Irradiation of the breast and nongenital tumors in pregnant women has no tendency to produce malformed babies. In the genital group irradiation of the pelvic regions will usually produce abortion in the early months of pregnancy. In the latter months of pregnancy, carcinoma of the cervix can be irradiated locally without affecting the fetus or producing abortion. Of forty-one known viable normal offspring at birth, only twenty-five could be traced and these, aged 1 to 10 years, show no evidence of any bad effects from tumor therapy.

American Journal of Pathology, Boston

13: 679-880 (Sept.) 1937

Arteriolar Sclerosis in Hypertensive and Nonhypertensive Individuals. A. R. Moritz and M. R. Oldt, Cleveland.—p. 679.

Intranuclear Inclusion Bodies in Tissue Reactions Produced by Injections of Certain Foreign Substances. P. K. Olitsky and C. G. Harford, New York.—p. 729.

Viable Pneumococci and Pneumococcic Specific Soluble Substance in Lungs from Cases of Lobar Pneumonia. R. N. Nye and A. H. Harris 2d, Boston.—p. 749.

*Role Played by Rheumatic Fever in Implantation of Bacterial Endocarditis. L. Gross and B. M. Fried, New York.—p. 769.

Effects of Coal Smoke of Known Composition on Lungs of Animals. Lucy Schnurer and S. R. Haythorn, Pittsburgh.—p. 799.

Postmortem Elasticity of Adult Human Aorta: Its Relation to Age and to Distribution of Intimal Atheromas. S. L. Wilens, New York.—p. 811.

Localized Congenital Defects of Cardiac Interventricular Septum: Study of Three Cases. D. G. Mason and W. C. Hunter, Portland, Ore.—p. 835.

*Hyperplasia and Regeneration of Myocardium in Infants and in Children. H. E. MacMahon, Boston.—p. 845.

Morphologic Changes in Superior Vena Cava and Right Auricle in Rheumatic Heart Disease. E. Waaler, New York.—p. 855.

Torula Infection. J. T. Crone, A. F. DeGroat and J. G. Wahlin, Little Rock, Ark.—p. 863.

Rheumatic Fever and Bacterial Endocarditis.—Gross and Fried describe the changes in the hearts in forty-two cases of subacute bacterial endocarditis and twenty-eight cases of acute bacterial endocarditis. While there is no sharp line of distinction between these conditions and a variety of lesions are common to the two, certain features are of aid in classifying the bacterial endocarditides into these two categories. An important, differentiating histologic feature is the spongy lesion that occurs in its typical form, perhaps exclusively, in subacute bacterial endocarditis. About 75 per cent of the hearts of patients having bacterial endocarditis had been the seat of a previous rheumatic process. Activity of a rheumatic infection is not a necessary precursor to the development of bacterial endocarditis. Aschoff bodies were encountered in about 30 per cent of the superimposed cases of acute and subacute bacterial endocarditis. Some of these cases were thrown into activity by the superimposed bacterial infection, rather than the activity of the rheumatic process predisposing to the bacterial endocarditis. Certain mechanisms by which the endocardial structures are predisposed to a bacterial implantation include the formation of eosinophilic necrosis of the valve closure line and thrombotic, proliferative and necrotic changes at these sites. Some of these alterations are brought about by the hemodynamics present in congenital and acquired defects. Others are probably due to inflammatory, toxic or degenerative processes. The endocardial alterations, together with intracardiac tension, seem to predispose the endocardial structures of the heart to bacterial implantation by providing suitable means for anchoring transient bacterial invaders. Some of these mechanisms are present in nonrheumatic valves, but less frequently than in rheumatic valves. It does not appear that the vascularization occurring in rheumatic valves plays an appreciable part in the implantation of bacterial endocarditis.

Hyperplasia and Regeneration of Myocardium.—MacMahon points out that in cardiac hypertrophy of infants there may be an active proliferation of myocardial elements in addition to growth by enlargement of the individual muscular fibers and that during childhood the muscular fibers of the heart may regenerate following severe injury. Both of these observations are in contradiction to current opinion, which is that hypertrophied hearts of adults may be explained mathematically on the basis of an increase in the size of the individual myocardial fibers and, secondly, that painstaking search throughout the myocardium in such cases of cardiac hypertrophy has failed to reveal any positive evidence, in the form of mitoses, of true myocardial proliferation. This frequently recorded absence of mitoses is also the most important single fact on which the statement that the muscular fibers of the heart cannot regenerate is based. Evidence is presented in the form of mitotic division of the nuclei of the muscular fibers of the heart to indicate that in cardiac hypertrophy of infants a proliferation of the muscular fibers of the heart can take place and that in severe myocardial injury in children regeneration of myocardial elements can occur.

American Journal of Physiology, Baltimore

120: 213-422 (Oct.) 1937. Partial Index

Purification of Adrenal Extracts and Isolation of an Activator of Male Sex Hormones. M. Ehrenstein and S. W. Britton, Charlottesville, Va.—p. 213.

Carbohydrate Mobilization. M. Caroline Hrubetz and S. N. Blackberg, New York.—p. 222.

Effect of Hypophysectomy on Arterial Blood Pressure of Dogs with Experimental Hypertension. I. H. Page and J. E. Sweet, New York.—p. 238.

New Physiologic Variable Associated with Sensible and Insensible Perspiration. A. P. Gagge, New Haven, Conn.—p. 277.

Physiologic Reactions of Human Body to Various Atmospheric Humidities. C.-E. A. Winslow, L. P. Herrington and A. P. Gagge, New Haven, Conn.—p. 288.

Relation Between Blood Osmotic Pressure, Fluid Distribution and Voluntary Water Intake. A. Gilman, New Haven, Conn.—p. 323.

*Effect of Posture on Cardiac Output. H. M. Sweeney and H. S. Mayerson, New Orleans.—p. 329.

Secretin Is a True Cholagogue. C. A. Tanturi, A. C. Ivy and H. Greengard, Chicago.—p. 336.

Reflex Inhibition of Knee Jerk from Intestinal Organs. J. G. Dusser de Barenne and A. A. Ward Jr., New Haven, Conn.—p. 340.

Basal Insulin Requirement of Depancreatized Dogs. P. O. Greeley, with technical assistance of S. Benson, J. Fraleigh, V. Goodhill, G. Jacobson and M. Kamins, Los Angeles.—p. 345.

Late Effects of Bilateral Resection of Splanchnic Nerves on Human Gastric Motor Mechanism. L. E. Barron and G. M. Curtis, Columbus, Ohio.—p. 356.

Influence of Adrenalectomy on Liver Fat as Varied by Diet and Other Factors. E. M. MacKay, San Diego, Calif.—p. 361.

Physiologic Properties of Central Excitatory Agent in Fluid Obtained by Occipital Puncture of Man and Animals. I. H. Page, New York.—p. 392.

Distribution in Body Fluids and Excretion of Ingested Ammonium Chloride, Potassium Chloride and Sodium Chloride. J. Bourdillon, New York.—p. 411.

Effect of Posture on Cardiac Output.—Sweeney and Mayerson made 200 determinations on the effect of posture on cardiac output in five subjects. Each subject was observed at intervals over a period of from four to six months. The original Grollman acetylene method and the Gladstone modification were used for the study. There was a consistent decrease in output on quiet standing as contrasted to recumbency. The average change per subject with the Gladstone method ranged from 5 to 26 per cent for all determinations and from 8 to 36 per

cent for paired observations. Greater differences were obtained when the Grollman method was used. Measurement of the acetylene diffusion during the rebreathing procedure gives no evidence of recirculation occurring in the recumbent position within twenty-three seconds. In the standing and sitting positions acetylene diffusion is retarded after about ten seconds, indicative of recirculation. Adequate mixing can be obtained by the Gladstone rebreathing procedure within four or five seconds and consistent results can be obtained by use of this method in the standing and sitting positions. The two methods give similar results in the recumbent position.

American Journal of Public Health, New York

27: 965-1078 (Oct.) 1937

The Early American Public Health Movement. R. H. Shryock, Durham, N. C.—p. 965.
Improved Medium for Demonstration of Hydrolysis of Sodium Hippurate by Streptococci. Julia M. Coffey and G. E. Foley, Albany, N. Y.—p. 972.
Maternity Care in Rural Areas by Public Health Nurses. Helen A. Bigelow, Albany, N. Y.—p. 975.
The Homicide Situation in the United States. R. N. Whitfield, Jackson, Miss.—p. 981.
*Vaccines Against the Common Cold: Are They of Value in Industrial Health Program?. L. D. Bristol, New York.—p. 987.
Staphylococci in Raw Oysters. J. C. Geiger and A. B. Crowley, San Francisco.—p. 991.
Bacteriologic Survey of Telephone Instruments Under Various Conditions of Use. C. B. Coulter and Florence M. Stone, New York.—p. 993.
Is Routine Examination and Certification of Food Handlers Worth While? W. H. Best, New York.—p. 1003.
Scoops as Source of Contamination of Ice Cream in Retail Stores. A. J. Krog and Dorothy S. Dougherty, Plainfield, N. J.—p. 1007.
Effects of Inhalation of Smoke from Common Fuels. Lucy Schnurer, Pittsburgh.—p. 1010.
Are Postmortem Statistics on Trichinosis Valid for the Living Population? W. Sawitz, New Orleans.—p. 1023.
An Outbreak of Typhoid Fever in Grand Rapids, Mich. J. L. Lavan, Grand Rapids, Mich.—p. 1025.
Changing Public Health Practices and Problems. A. Wolman, Baltimore.—p. 1029.

Vaccines Against the Common Cold.—Bristol gives the results of treatment with standard stock vaccines or serobacterins from cultures of the common pathogenic microorganisms of the respiratory tract in six separate groups of industrial subjects (totaling more than 19,000). The time over which this treatment against the common cold was available to the different groups varied from seventeen to five years. On the whole the study indicates an apparent reduction in the severity, duration and complications of acute respiratory diseases. There is little evidence that such vaccines have materially reduced the incidence of the common cold. To the extent that such vaccines reduce the length of disability and absence from work, they apparently may be of some value in the industrial health program. While no one procedure alone, such as the use of vaccines, should be relied on entirely to build resistance against colds, a broad program of preventive treatment should be encouraged particularly among cold-prone employees, in cooperation with their family physicians.

American Journal of Surgery, New York

38: 1-226 (Oct.) 1937. Partial Index

Relation of Water, Sodium Chloride and Acid-Base Balance to Renal Function in Treatment of Lesions of Urinary Tract. H. C. Habein and R. E. Mulrooney, Rochester, Minn.—p. 6.
*Diagnosis and Treatment of Perinephric Abscess: Renal Fixation, a New Roentgenographic Diagnostic Sign. C. P. Mathé, San Francisco.—p. 35.
Diagnosis and Indications for Treatment of Renal Tuberculosis. G. J. Thomas, T. L. Stebbins and C. K. Petter, Minneapolis.—p. 57.
*Diagnosis and Treatment of Movable Kidney. W. P. Herbst, Washington, D. C.—p. 66
Incidence and Prevention of Renal and Vesical Calculi in Fracture and Traumatic Group. E. J. McCague, Pittsburgh.—p. 85.
Complications Following Prostatic Resection. H. C. Bumpus Jr., Pasadena, Calif.—p. 89.
Infiltrating Cancer of Bladder Involving Trigon: Treatment. R. S. Ferguson, New York.—p. 137.
Elusive Ulcer (Hunner) of Bladder with Experimental Study of Etiology. R. H. Herbst, G. O. Baumrucker and K. L. German, Chicago.—p. 152.
Hormone and Surgical Bases for Treatment of Undescended Testis. C. L. Deming, New Haven, Conn.—p. 186.
Total Cystectomy for Infiltrating Carcinoma of the Bladder. E. Beer, New York.—p. 192.

Diagnosis and Treatment of Perinephric Abscess.—The new x-ray sign for the diagnosis of suppurative perinephritis that Mathé discusses consists of renal fixation evidenced by making retrograde or intravenous pyelograms in the reclining and standing positions. This sign occurs early, is present in all cases, and has been repeatedly verified by operation or by necropsy. It was the only positive x-ray sign encountered in twenty-seven proved cases of perinephric abscess in which a complete urologic examination was made. The early diagnosis and intelligent treatment of suppurative perinephritis depends on a thorough knowledge of all types of cases (primary hematogenous, perinephric abscess secondary to kidney lesions and paranephric abscess secondary to lesions of neighboring organs). Important signs and symptoms are persistent remittent fever, leukocytosis, fulness in the loin or abdomen with a relative paucity of chemical changes in the urine. Corroborative x-ray signs are: renal fixation, obscuration of the psoas muscle and kidney outline, displacement of the kidney and ureter revealed by stereoscopic films, opaque shadow cast by abscess, curvature of the spine, displacement of the colon and fluoroscopic evidence of disturbance of respiratory synchronism and the presence of a wave in the cavity of the abscess. Treatment of perinephric abscess consists of prophylactic measures instituted to relieve infectious processes, in order to prevent invasion of the blood stream and later metastatic infection of the perinephrium. Surgical drainage with sufficient exposure to permit search for walled off pockets, examination of the kidney for cortical abscess formation and adequate drainage is recommended. Two stage nephrectomy is advised in grave cases of perinephric abscess secondary to destructive inflammatory processes of the kidney.

Diagnosis and Treatment of Movable Kidney.—Herbst believes that to demonstrate ptosis urographically one of the following methods should be used: (1) Urograms must be taken in the prone and upright position, (2) serial urograms should be taken with different phases of respiration (from that of complete expiration to extreme inspiration), (3) the method of serial pyelography practiced by Moore is perhaps the most practical because it can be done with least difficulty, (4) the method of Jarre and Cumming is valuable, (5) the best method is direct fluoroscopy using skiodan with retrograde ureteral catheter injection, with the patient in both the prone and upright positions and (6) the ideal method would be motion picture film records of the fluoroscopic visualization following the intravenous administration of some compound that would be excreted in sufficient concentration to render fluoroscopic visualization satisfactory. The treatment of ptosis of the kidney presents individual problems. Nephropexy in properly selected individuals is productive of as large a proportion of satisfactory results as any surgical procedure. The individual with marked ptosis of the third degree with severe symptomatology will not respond to belts or increase in weight and therefore nephropexy should be performed, the following principles being observed: 1. The kidney and upper part of the ureter should be completely mobilized so that, regardless of the position in which the kidney may be fixed, the relationship of the upper part of the ureter and pelvis may allow of proper accommodation. 2. In view of the fact that the production of pain may be prevented by interference with the nerve supply to the kidney, stripping of the nerves from the renal pedicle should be done. Stripping the nerves from the renal pedicle will remedy most of the pain-producing abnormal motility syndromes, which may or may not have been recognized. 3. The bed in which the kidney is to lie should be well cleared of fat so that satisfactory adhesions may form. The height at which the kidney is fixed is not important. The main factor is that it be fixed in a position at which the renal pelvis may accommodate itself satisfactorily to the upper part of the ureter and at which the various forces will have the least possible chance of pushing it downward and again disturbing the ureteropelvic relationship. In the treatment of ptosis of the second degree, conservative methods should be tried before operation is resorted to. When these expedients fail or when definite hydronephrosis develops, nephropexy should be performed. In the first degree of ptosis much patience should be displayed in attempting to relieve the complaint by the putting on of weight, abdominal pads, and the use of the various drugs that control neuromuscular dysfunction. Ureteral dilation will occasionally relieve symptoms but usually calls for repeated dilation. Nephropexy is the procedure of choice in individuals who will not respond to conservative treatment or who have hydronephrosis.

American Review of Tuberculosis, New York

36: 437-576 (Oct.) 1937

Pleural Fluid in the Course of Artificial Pneumothorax. J. M. Nicklas, R. M. Franklin and W. A. Zavod, Valhalla, N. Y.—p. 437.
Nature of Pleural Effusions Complicating Artificial Pneumothorax. E. Mayer and M. Dworkin, New York.—p. 461.
*Massive Pleural Effusions in Artificial Pneumothorax: Their Influence on Underlying Pulmonary Tuberculosis. M. B. Rosenblatt, New York.—p. 467.
A Five Year Review of Tuberculosis in College Students. L. H. Ferguson, Cleveland.—p. 478.
Phrenicectomy Reinforced by Pneumoperitoneum. F. Fremmel, Chicago.—p. 488.
Pulmonary Rest by Limitation of Costal and Diaphragmatic Excursion. A. B. Steele, Santa Barbara, Calif.—p. 506.
Varying Duration of Arrested Stage: Plea for Revision of Present Classification Standards. L. H. Fales and E. A. Beaudet, Livermore, Calif.—p. 511.
*Lower Lobe Tuberculosis. W. H. Weidman and H. B. Campbell, Norwich, Conn.—p. 525.
The Brain in Chronic Tuberculous Meningitis. B. J. Alpers and R. A. Matthews, Philadelphia.—p. 542.
Isolation of Acid-Fast Bacteria from Soil. Ruth E. Gordon and W. A. Hagan, Ithaca, N. Y.—p. 549.
Relationships Between Free-Living Thermal Ciliates and Ingested Acid-Fast Bacteria. Lucia J. Dunham.—p. 553.
Red Cell Sedimentation in Pulmonary Tuberculosis. R. Volk, Boston.—p. 567.

Massive Pleural Effusions in Artificial Pneumothorax.—Rosenblatt states that between 1920 and 1935 there were nine cases at the Tuberculosis Division of the Montefiore Hospital in which a massive effusion occurring in the course of artificial pneumothorax was permitted to remain intact with subsequent abandonment of the pneumothorax. No unfavorable complications materialized and the ultimate results were far better in this group than in the entire group of all pneumothorax cases. One of the important objections to permitting pleural effusions to remain intact is the danger of their becoming purulent. In the seven cases in which the pleural fluid was aspirated there were no instances of empyema. However, in two of them the fluid was turbid. These were the cases in which the greatest number of aspirations was made. Another major objection was that the fluid, if it did not become purulent, would remain unabsorbed for a long period and embarrass the patient's condition in many ways. The patients who were followed up after discharge showed complete absorption of the fluid with only residual thickening of the pleura. Retraction of the trachea or mediastinum was slight and did not cause respiratory or cardiac difficulties. Following the absorption of the fluid no cavities remained opened. On the contrary, the pulmonary disease seemed healed in a most effective manner with only scattered fibrotic infiltrations as scars of the former caseating lesions. Another objection is that the presence of the fluid will result in the formation of adhesions which would prevent the continuation of pneumothorax at a later date if it should become necessary. Whether it was a mechanical or a biologic action cannot be ascertained, but the ultimate results obtained seemed to be final and the question of reestablishing pneumothorax did not arise. The period of active therapy was shortened. While the massive effusion did not abruptly alter the patient's clinical condition, the subsequent clinical course was one of improvement. The average duration of active therapy in these cases was far less than for pneumothorax cases in general and the results are far more encouraging. If the patient who had bilateral disease at the time pneumothorax was induced is not considered, all the patients were discharged as improved with negative sputum. Six patients who have been observed from one and a half to ten years after discharge are well and working or able to work. The author is convinced that the prognosis of the patient who has developed a massive effusion in the course of artificial pneumothorax is far better ultimately than that of the patient in whom collapse therapy is continued by removal of the fluid; that is, in dominantly unilateral cases. When the amount of fluid is insufficient to interfere appreciably with pneumothorax refills, they should be continued with no regard to the presence of the fluid; but when the effusion has reached massive proportions so that it is impossible to continue further insufflations, the pneumothorax should be abandoned and the fate of the disease left with the effusion.

Tuberculosis of the Lower Lobe.—Of their forty cases of tuberculosis of the lower lobe that Weidman and Campbell encountered in a review of the roentgenograms of all patients admitted to their institution from January 1932 until October 1936 the results were unsatisfactory in nine (eight died), eleven were partially satisfactory, fourteen are satisfactory to date, five have been observed too briefly, all are improving at present and one is untreated. The results considered in the aggregate are far from brilliant, irrespective of the collapse therapy employed. They tend to substantiate the contention that tuberculosis of the lower lobe is still a definite therapeutic problem.

Annals of Surgery, Philadelphia

106: 481-800 (Oct.) 1937. Partial Index

Samuel Gross Looks in on American Surgical Association. E. A. Graham, St. Louis.—p. 481.
*Intracranial Pressure Without Brain Tumor: Diagnosis and Treatment. W. E. Dandy, Baltimore.—p. 492.
Place of Exploratory Operation in Surgery of Subphrenic Abscess: Report of Nine Negative Explorations. E. P. Lehman, University, Va.—p. 514.
Control of the Heart Beat by the Surgeon, with Especial Reference to Ventricular Fibrillation Occurring During Operation. C. S. Beck and F. R. Mautz, Cleveland.—p. 525.
Etiology of Cancer in Light of Our Present Knowledge. J. J. Morton, Rochester, N. Y.—p. 539.
Malignant Changes in Forestomach of Rats Related to Low Protein (Casein) Diet and Prevented with Cystine. G. R. Sharpless, Detroit.—p. 562.
Epithelioma of Lower Lip: Suggested Routine for Treatment with Description of Operative Excision of Submental and Submaxillary Lymph Nodes. R. H. Kennedy, New York.—p. 577.
Results and Methods of Treatment of Cancer by Radiation. H. Coutard, Paris, France.—p. 584.
Effect of Radiation Therapy on Intracranial Gliomas. L. Davis and A. Weil, Chicago.—p. 599.
Place of Radium in Treatment of Cancer of Breast. G. Keynes, London, England.—p. 619.
Carcinoma of Cervix Treated by Roentgen Ray and Radium. J. V. Meigs and R. Dresser, Boston.—p. 653.
Cancer Surgery: Value of Radical Operations for Cancer After Lymphatic Drainage Area Has Become Involved. C. Eggers, New York.—p. 668.
Development of Laboratory Service in Cancer Hospital. J. Ewing, New York.—p. 715.
Congenital Atresia of Bile Ducts. E. J. Donovan, New York.—p. 737.
Obstructive Jaundice: Cause and Prevention of Bleeding Dyscrasia. H. C. Naffziger, J. L. Carr and F. S. Foote, San Francisco.—p. 745.
Postoperative Use of Insulin in the Nondiabetic, with Especial Reference to Wound Healing. F. B. Gurd, Montreal.—p. 761.
Rupture of Lumbar Intervertebral Disk: Etiologic Factor for So-Called "Sciatic" Pain. W. J. Mixter, Boston.—p. 777.

Intracranial Pressure.—During the last seven years, Dandy encountered twenty-two cases in each of which the signs and symptoms of intracranial pressure have been indubitable, and yet in none has there been an intracranial tumor or a space occupied by a lesion of any kind. Almost without exception a clinical diagnosis of unlocalized cerebral tumor has been excluded by ventriculography. All these patients have complained of headache, most of them of nausea, vomiting, diplopia, dizziness and many of loss of vision, and objectively in every instance there have been bilateral papilledema and usually hemorrhages in one or both eyegrounds to indicate that intracranial pressure was present. In each case the intracranial pressure has been demonstrated objectively and usually actually measured by ventricular or lumbar punctures. The subsequent demonstration of pressure over a period of months or years is merely a matter of inspecting the site of the subtemporal decompression to which most of these patients were subjected for treatment, with success. The increased intracranial pressure may last only a few months, but at times it may persist for years. Curiously, the decompression is almost never consistently at its maximal fulness but is intermittent, and the pressure may come and go with surprising rapidity—from one extreme to the other in a few minutes. The cause of the sudden changes—indeed the cause of the increased pressure at all—is unknown. It can be reasoned with safety that the increased intracranial pressure is dependent on the content of the intracranial fluid. The only other possible explanation of the increased pressure is by variations in the intracranial vascular bed, probably by vasomotor control. That the increased pressure usually sets its limit within the bounds of relief afforded by a subtemporal decompression is indeed surprising. The periodic nature of the attacks, and also the permanence of cure of four persons known to have remained well without treatment, lead to the suspicion that this condition may be a common one and that only the most severe grades are encountered by the physician, and that many of the transient, unexplainable headaches may really be instances of this condition, though in lesser degree.

Archives of Internal Medicine, Chicago

60: 567-734 (Oct.) 1937

*Pneumonia Due to Type V Pneumococcus. M. B. Rosenblüth and M. Block, New York.—p. 567.
Effect of Oxygen Injected Subcutaneously on Antibody Formation. G. P. Youmans and T. Simpson, Chicago.—p. 574.
Classification and Terminology of Leukemia and Allied Disorders. C. E. Forkner, Peiping, China.—p. 582.
*Shock Syndrome in Therapeutic Hyperpyrexia. I. Kopp and H. C. Solomon, Boston.—p. 597.
Immunologic Studies of Sickle Cell Anemia. W. W. Cardozo, Chicago. —p. 623.
Pulsations of the Wall of the Chest: IV. Pulsations Associated with Adhesive Pericardial Disease. W. Dressler, Vienna, Austria.—p. 654.
Id.: V. Pulsations Associated with Mitral Regurgitation and Aneurysmal Dilatation of Left Auricle. W. Dressler, Vienna, Austria.—p. 663.
Optic Neuritis in Hyperthyroidism: Report of Case with Review of Literature. R. B. Brown and G. A. Schwarz, Philadelphia.—p. 668.
Gastric Acid During Recurrences and Remissions of Duodenal Ulcer. C. F. G. Brown and R. E. Dolkart, Chicago.—p. 680.
Central Nervous System and Sugar Metabolism: Clinical, Pathologic and Theoretical Considerations, with Especial Reference to Diabetes Mellitus. A. R. Vonderahe, Cincinnati.—p. 694.
Gastro-Enterology in 1936: Selected Topics. G. Cheney, San Francisco. —p. 705.

Pneumonia Due to Type V Pneumococcus.—Rosenblüth and Block discuss their observation in sixty-eight cases of pneumonia due to type V pneumococci among 1,850 cases of pneumococcic pneumonia, giving an incidence of 3.5 per cent. The two impressive features in the incidence of the disease have been a tendency to epidemicity, evidenced by the fact that groups of four or five patients have on several occasions been admitted to the hospital within a few days, and an apparent increase in frequency. This organism, in contrast to many of the new types of pneumococci, must occur rarely if ever as a saprophyte in the mouths of normal persons. In no case was it found except in association with definite pneumonia. Certain factors which appeared to be predisposing were in general similar to those found in other types of pneumonia. Predominant among these was infection of the upper respiratory tract, usually a common cold. This infection was present in thirty-four of the sixty-eight cases. There was a history of exposure in twenty, of trauma in two, of alcoholic stupor in three and of dietary deficiency in three. In three cases pneumonia was associated with pregnancy. In one case, in which pneumonia developed while the patient was in the ward, definite contact infection was evident. Only seven of the sixty-eight patients were women. The ages of the patients were scattered fairly evenly, except in the fourth decade, in which belonged twenty-four patients. The clinical course was characterized by an abrupt onset and a prolonged course, and in more than half the cases there was termination with crisis. Headache, vomiting and jaundice were common symptoms. There was a high incidence of bacteremia and anoxemia. Complications were frequent. In the cases in which serum treatment was given there was a lower mortality than in the cases in which serum treatment was not given. The difference was especially marked when treatment was given early. That group IV pneumonia is always a mild infection is contradicted by the present study.

Shock in Therapeutic Hyperpyrexia.—Kopp and Solomon made a study of the severe reactions, considered as shock, that occurred in eight patients during hyperpyrexia induced by hot moist air. These patients were from 19 to 56 years of age. Death resulted in two of this group. The reactions occurred at temperatures of 106 F. or above, the body temperature usually showing some further rise during the reaction. The impending shock was ushered in by a sudden increase in the pulse rate, pallor or cyanosis of the skin, a continued or rapid rise in the body temperature, fluttering of the eyelids, twitchings of the muscles of the face or extremities, vomiting or sudden quietness, suggesting coma in a patient who had previously complained bitterly of the heat. Readings of the blood pressure when obtained at this time showed low levels and in three patients the radial pulse was either weak or absent. The pulse rate at the onset was usually rapid. In one patient it increased from 130 to 180. In six patients these initial symptoms were followed by clonic or tonic convulsive movements of the jaw, extremities or trunk, and in five of the latter group the rigidity, either localized or generalized, was so marked that it was difficult to differentiate it from the tonic state of a convulsive seizure or muscular rigors due to heat cramps. In all patients considerable hyperactivity, jactitation and maniacal excitement occurred, and it was necessary to restrain them. This episode was either preceded or followed by coma or delirium or both. Clinical signs of pulmonary edema were present in three patients. The skin of each patient was hot and dry. Sodium amytal or morphine sulfate was administered to five patients of this group before or during fever therapy. Six patients survived the treatment, five recovering completely in from one to forty-eight hours, with no residual changes or complaints. The sixth patient experienced a stormy convalescence of eight weeks. The mechanism of shock under the conditions of hyperpyrexia consists of a diminution in the blood volume, an increase in the vascular bed and an increase in the vascular permeability. A disturbed neurogenic mechanism, in addition to a disturbed hematogenic mechanism (dehydration), is also present. The presence of alkalosis and hypochloremia during artificial hyperpyrexia modify the clinical picture of the shock syndrome. Treatment should attempt to reduce the body temperature, increase the volume of blood, diminish the capillary permeability and compensate for the alkalosis and the loss of chlorides by (1) the evaporation of lukewarm water from the surface of the body, (2) intravenous infusions and (3) inhalations of carbon dioxide and oxygen.

Archives of Surgery, Chicago

35: 621-832 (Oct.) 1937

Incidence of Asymptomatic Pathologic Conditions of the Appendix: Based on Study of 2,065 Consecutive Incidental Appendectomies. H. J. Shelley, New York.—p. 621.
Chronic Functional Lesions of the Shoulder. A. W. Meyer, Stanford University, Calif.—p. 646.
Influence of Laparotomy on Gastric Motor Mechanism of Man. L. E. Barron, New Haven, Conn.; G. M. Curtis and B. Lauer, Columbus, Ohio.—p. 675.
*Carcinoma of the Female Breast, with Especial Consideration of Preoperative Irradiation: Preliminary Report. L. C. Cohn, Baltimore. —p. 694.
Gastric Surgery and Gastroscopy: Differential Diagnosis of Benign and Malignant Lesions; Operability of Tumors as Determined by Gastroscopy; Early Diagnosis of Gastric Carcinoma; the Postoperative Stomach. R. Schindler and N. Giere, Chicago.—p. 712.
*True Branchiogenic Cyst and Fistula of the Neck. H. W. Meyer, New York.—p. 766.
Laxity of Radio-Ulnar Joint Following Colles Fracture. R. K. Lippmann, New York.—p. 772.
Torsion of Pedicle in Ovarian Tumors. P. Bernstein, New York.—p. 787.
A Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Budapest, Hungary; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson, J. T. Priestley, Rochester, Minn., and V. J. O'Conor, Chicago.—p. 795.

Carcinoma of the Female Breast.—There is no actual proof that preoperative irradiation followed by simple excision of the breast is not as good as preoperative irradiation followed by the complete operation, yet 44 per cent of the patients who had preoperative irradiation followed by the complete operation had demonstrable metastases in the axillary glands, and Cohn thinks that there should be no restriction of the complete operation because of preoperative irradiation. The surgeon will have only one opportunity to cure a patient with carcinoma of the breast. When a clinically benign tumor proves in a frozen section to be cancer or is suggestive of cancer, he has the choice of doing the complete operation at once or closing the wound, giving preoperative irradiation and after the proper interval of time doing the complete operation. In the doubtful cases, while the irradiation is going on the section can be submitted to other pathologists for their opinions. When the sections show cancer, even though all palpable evidence of disease was completely removed for biopsy, for the present anyway, the author feels that the complete operation should follow. The chances of curing a recurrent carcinoma of the breast are so small that he has about decided no longer to advise operation. Of the forty-one patients with recurrent carcinoma in his series only four are well, and the average length of time since these four were admitted to the clinic is only one year. Some of these recurrent carcinomas will be operable and present an apparently favorable prognosis, but the fact alone that they are recurrent almost excludes any possibility of a cure by surgical measures or by preoperative irradiation and surgical treatment. Perhaps even in this group it may be wise to treat by irradiation only.

True Branchiogenic Cyst and Fistula of the Neck.—Meyer discusses the embryology of the branchial area and presents the case of a boy of 9 in whom after the removal of a branchiogenic cyst the tract was opened and found to be lined with normal appearing skin and to be firmly attached to the styloid process. Microscopically, as was shown by the photomicrographs, the wall of this tract contained all the appendages of the skin, as hair follicles, sweat glands and sebaceous glands; that is, the growth was a true branchiogenic cyst and tract originating from the second branchial arch. Complete removal of this brought about a cure of the condition.

Canadian Medical Association Journal, Montreal

37: 311-414 (Oct.) 1937

Rheumatic Fever and Heart Disease in Children. H. B. Cushing, Montreal.—p. 311.
Vagus Stimulation and Production of Myocardial Damage. G. W. Manning, G. E. Hall and F. G. Banting, Toronto.—p. 314.
Diagnosis of Common Causes of Jaundice. A. M. Snell, Rochester, Minn.—p. 319.
Jaundice: Surgical Considerations. A. T. Bazin, Montreal.—p. 328.
*Importance of Earlier Operation in Chronic Gallbladder Disease. O. W. Niemeier, Hamilton, Ont.—p. 332.
Endocrine Factors in Normal and Abnormal Menstruation. M. C. Watson, Toronto.—p. 337.
Fever Therapy. E. E. Shepley, Saskatoon, Sask.—p. 341.
*Prevention and Treatment of Keratitis Neuroparalytica by Closure of Lacrimal Canaliculi. J. A. MacMillan and W. Cone, Montreal.—p. 348.
Notes on Menopause. E. Shute, London, Ont.—p. 350.
Fractures of Forearm. G. W. Armstrong, Ottawa, Ont.—p. 358.
Anesthesia from the Patient's Point of View. H. R. Griffith, Montreal.—p. 361.
Sulfanilamide in Treatment of Gonorrhea. H. Orr, Edmonton, Alta.—p. 364.
Unusual Sequence of Events in Gastrojejunal Ulcer. E. P. Scarlett and D. S. Macnab, Calgary, Alta.—p. 366.
Adrenal Cortical Hormone: Method of Assay and of Preparation. G. Hunter and M. M. Cantor, Edmonton, Alta.—p. 368.

Chronic Gallbladder Disease.—In addition to operating on 143 patients himself, Niemeier studied 529 operations on the biliary tract performed at the Hamilton General Hospital. An estimation of the mortality rate in each ten year group, in these and several other series of cases, shows a progressive rise in each decade, undoubtedly due in part to advancing age and to the more advanced stage of the disease, as operative and pathologic observations suggest a long duration of the disease in these older patients. That many of the patients could have been operated on earlier with a lower mortality is indicated by the fact that in a number of them the history extended back over a long period of years. Ninety-nine patients, or 69 per cent, postponed operation until they were driven to it by unbearable pain or some acute emergency or serious complication. As most of the patients had been under the care of physicians from time to time, and the diagnosis of disease of the gallbladder had been made in the majority, it is apparent that the tendency of the patient to delay is but a reflection of the attitude of the physician toward chronic lesions of the gallbladder. Many physicians believe that chronic latent disease of the gallbladder is a harmless condition for which surgery is not indicated unless some acute manifestation or alarming complication develops. The prevalent policy of delay in the surgical treatment of chronic disease of the gallbladder also results in damage to adjacent organs such as the liver and pancreas. Hepatitis can frequently be seen in the gross and is often visibly more marked in the immediate vicinity of the gallbladder. Once destructive changes have occurred in adjacent organs, the patient, even after cholecystectomy, will be left with permanent damage. In addition to local effects of neglected chronic disease of the gallbladder, there are other insidious and more widespread effects. Many patients with apparently latent lesions pay the penalty of delay in the form of damage to distant organs. Literature has accumulated regarding the diseased gallbladder as an etiologic or aggravating factor in systemic disease. Statistical, pathologic and clinical evidence all emphasize the importance of earlier surgical treatment of chronic disease of the gallbladder. With modern diagnostic methods, earlier recognition of the condition should present little difficulty.

Treatment of Keratitis Neuroparalytica.—MacMillan and Cone blocked the canaliculi, preventing the escape of tears into the lacrimal sac and drying, in one case with neuroparalytic keratitis. The corneal lesion healed promptly. The satisfactory result following closure of the canaliculi has been maintained for five months. It is comparable to the results described by Beetham after he had closed the ducts in patients with filamentary keratitis. The canaliculus was slit with the actual cautery, it closed permanently, and therefore such a procedure would seem to be the one of choice. If the important factor in the development of corneal lesions is diminished secretion, it should be possible by detailed physiologic tests to select the cases in which this complication is apt to develop and to prevent it.

Delaware State Medical Journal, Wilmington

9: 177-190 (Sept.) 1937

Prevention of Hypertension. E. Weiss, Philadelphia.—p. 177.
Hypertension and Cerebral Manifestations. A. Gordon, Philadelphia.—p. 180.

Florida Medical Association Journal, Jacksonville

24: 191-246 (Oct.) 1937

Appendicitis in Children. D. D. Martin, Tampa.—p. 203.
Venereal Diseases: Can We Hope to Control and Possibly Eradicate Syphilis and Gonorrhea? H. E. Palmer, Tallahassee.—p. 207.
*Unusual Clinical Manifestations of Some Brain Tumors. L. Y. Dyrenforth, Jacksonville.—p. 211.
Care of Surgical Patients. W. C. Jones, Miami.—p. 216.
Unusually Located Appendix. W. D. Sugg, Bradenton.—p. 219.
The Public Health Approach to Contraception. Lydia Allen DeVilbiss, Miami.—p. 222.

Unusual Manifestations of Some Brain Tumors.—Dyrenforth discusses two clinical manifestations of cerebral tumors that are remote from the ordinary diagnostic procedures. The first of these is the definite neoplastic entity known as oligodendroglioma. The most important sign in these tumors is the presence of lime salts. Even in the earliest forms they tend to become cystic and promptly form calcareous deposits which are opaque to x-rays. This condition is of importance in the demonstration of such a tumor. The presence of characteristic opacities in roentgenograms of this brain tumor is significant enough for diagnosis, particularly since it is a cerebral type of growth. Other clinical changes must, of course, be considered: papilledema of low grade, xanthochromic cerebrospinal fluid, increased intracranial pressure and various neurologic signs. But while these are characteristic of numerous cerebral lesions, the x-ray demonstration of calcific deposits in a cystlike formation in the cerebrum, ordinarily unilateral, would be diagnostic of this particular tumor. In view of its operability this is considered an important item. The other manifestation offered for consideration is that of peptic ulcer. More specifically this is a lesion of the prepyloric area, but there is recognized a closely related neurogenic theory of origin. But this has to do with damage to the extranuclear vagus and sympathetic systems, whereas the idea proposed by the author is that of cerebral damage, specifically from neoplasm, and the resulting influence on the gastric secretion. To this group are related also the experimental results with pharmacologic methods; namely, injuring the base of the brain by injecting epinephrine into animals and causing overstimulation of the sympathetic system with the production of gastric and duodenal erosions. A parasympathetic center in the diencephalon or interbrain is suggested, from which fiber tracts pass backward and form a relay with the nucleus of the vagus nerve, among others, and this therefore accounts for the influence on the alimentary canal of lesions in this area. Cushing finds that lesions anywhere along the course from the anterior hypothalamus to the vagal center may cause gastric lesions. The result may be from parasympathetic stimulation or from "vagal release" due to sympathetic paralysis. Since intracranial injuries and diseases of this portion of the brain are known to produce lesions of the gastric mucosa, he concludes that such conditions following certain of his cerebellar operations are of identical nature. Cushing goes on to say that this evidence of involvement of the medullary center or a minor involvement of the interbrain may well explain the presence of "a long overloaded station for vegetative impulses easily affected by psychic influences . . . that highly strung persons . . . of nervous instability classified as vagotonic . . . are prone to have chronic digestive disturbances with hyperacidity often leading to ulcer." The fact is stressed that cerebral tumors are frequently the cause of this condition whether directly, by mechanial influences, or indirectly, by reason of surgical influences.

Illinois Medical Journal, Chicago

72: 285-376 (Oct.) 1937

Modern Problems in Control of Streptococcic Diseases. J. H. Bailey, Chicago.—p. 301.
Lessons Learned from a Blind School Survey. R. J. Masters, Indianapolis.—p. 309.
*Some Dangers of Rapid Diuresis. M. H. Barker, Chicago.—p. 313.
Metaphen Intravenously in Treatment of Tularemia. F. L. Barthelme, Effingham.—p. 317.
Radium Therapy of Cancer of Oral Cavity. H. E. Davis, Chicago. —p. 320.
Scarlet Fever and Its Complications: Statistical Study of 783 Cases of Scarlet Fever in School Children One Year After an Epidemic. E. H. Quandt, Rockford.—p. 323.
Some Roentgen Considerations of the Childhood Type of Tuberculosis. E. E. Barth, Chicago.—p. 328.
Three Interesting Intra-Ocular Tumors (Malignant Melanomas). M. L. Ostrom, Rock Island.—p. 331.
The Acute Nasal Infection: Local Therapy Based on Modern Conception of Nasal Physiology. O. E. Van Alyea, Chicago.—p. 336.
Vaginal Septum, Double Cervix and Bicornate Uterus: Report of Six Cases of Maldevelopment of the Birth Canal. C. E. Galloway, Evanston.—p. 341.
Whole Suprarenal Gland: A Useful Therapeutic Agent. O. Barbour, Peoria.—p. 343.
New Method of Stabilizing Weak Joints. L. W. Schultz, Chicago.—p. 350.
Oxygen Content of Blood During the New Treatments for Schizophrenia: Preliminary Report. J. Steinfeld and L. Gerber, Peoria. —p. 351.
Injuries of Semilunar Cartilages. R. M. Carter, Green Bay, Wis.—p. 354.
Treatment of Hypertension, with Especial Reference to Newer Knowledge of Causes of Hypertension. S. K. Robinson, Chicago.—p. 357.
Narcolepsy: Attacks of Irresistible Sleep. R. L. Gorrell, Clarion, Iowa. —p. 368.

Dangers of Rapid Diuresis.—Barker points out that, with the improvement of diuretic management, edema as such is much more readily controlled and one is too frequently tempted to watch the volume of urine or weight drop without sufficient regard to the concentration of the waste products that may be less easily eliminated. Edema is only a symptom and the fundamental problem must not be slighted. The volume of fluid in the edematous patient is frequently much larger than one's greatest estimate. This fluid must be cleared through the kidneys and often either the long standing passive congestion or actual renal vascular disease or both alter greatly their ability to clear minerals and waste products of protein metabolism. Nature's dilution of retained materials is often a most important physiologic safeguard. The reverse of the process therefore becomes a most important matter to such patients unless careful observation is maintained. The great benefits derived from a physiologic diuresis cannot be emphasized too greatly. The fact that drugs usually are quite evenly distributed through the fluids of the body makes diuresis an element of danger in some cases. This is true of digitalis. One must be alert to the urgent need for the control of diuresis by an active antidiuretic plan.

Johns Hopkins Hospital Bulletin, Baltimore

61: 221-294 (Oct.) 1937

Problems in Active and Passive Immunity. T. Madsen, C. Jensen and J. Ipsen, Copenhagen, Denmark.—p. 221.
Extensive Injury to Cerebral Cortex Following Nitrous Oxide-Ether Anesthesia: Case. F. R. Ford, F. B. Walsh and J. A. Jarvis, Baltimore.—p. 246.
*Observations on Development of Intrathoracic Calcification in Tuberculin-Positive Infants. Miriam Brailey, Baltimore.—p. 258.
Protective Action of Sulfanilamide and Antimeningococcus Serum on Meningococcic Infection of Mice. T. M. Brown, Baltimore.—p. 272.
Peculiar Case of Encephalitis and Myositis. Ella Hutzler Oppenheimer, Baltimore.—p. 280.

Intrathoracic Calcification in Tuberculin-Positive Infants.—Brailey obtained the 158 cases for her study from the patients admitted to the special clinic for childhood tuberculosis of Johns Hopkins Hospital between Nov. 1, 1928, and Nov. 1, 1933, all of whom at time of entry into this study (1) were less than 2 years of age, (2) were tuberculin positive, (3) showed on x-ray examination no evidence of calcification and (4) have since been followed with serial roentgenograms for periods ranging from less than one to more than five years. Calcification appeared in the chest in about 17 per cent of children observed one year after the discovery of tuberculous infection. This proportion rose to 47 per cent by the end of two years, to 62 per cent by the end of three years and to 66 per cent by the end of four years. White and Negro children developed calcification at equal rates, but the Negro children had unhealed lesions associated with first calcification in 55 per cent of the ninety-eight cases and the white children in 30 per cent of the sixty-five cases. The proportion of cases in which calcification appeared varied with the extent of the lesion. Within a period of four years it was observed in 86 per cent of children who had shown parenchymal lesions, in 67 per cent of those who had shown definite involvement of the tracheobronchial node without parenchymal lesions, and in 36 per cent of those in whom no definite lesion had ever been recorded. In 90 per cent of the cases calcification appeared first in the tracheobronchial lymph nodes. Associated calcifying pulmonary nodules were observed simultaneously in about one third of these cases, and in another third pulmonary nodules appeared later. About one fifth of the cases in which calcification developed had shown no definite lesion in earlier x-ray studies. In the remaining four fifths, calcification usually took place on the side of the thorax at which the active lesion had been noted, but in 9 per cent it appeared only on the opposite side, where no lesion had been seen. Serial roentgenograms demonstrate that small deposits of calcium may become indistinguishable with time, owing to changes in the calcified mass or to its becoming hidden by mediastinal structures. An instance is cited of the absorption and disappearance of a calcified parenchymal nodule within four years of its first appearance. Of forty-six patients in whom calcification had been noted more than two years previously, tested recently with old tuberculin with the possible exception of one patient failing to react to 0.01 mg. and not retested, no instance of loss of allergy has been found.

Journal of Bacteriology, Baltimore

34: 243-352 (Sept.) 1937

Fibrinolytic, Anticoagulating and Plasma-Clotting Properties of Staphylococci. E. Neter, Buffalo.—p. 243.
Independent Variation of Several Characteristics in Serratia Marcescens. G. B. Reed, Kingston, Ont.—p. 255.
New Method for Evaluation of Germicidal Substances. A. J. Salle, W. A. McOmie and I. L. Shechmeister, Berkeley, Calif.—p. 267.
Study of Meningococci Recovered in the United States Since 1930. Sara E. Branham and Sadie A. Carlin, Washington, D. C.—p. 275.
Relationships Between Staphylococci and Bacilli Belonging to Subtilis Group as Shown by Bacteriophage Absorption. M. L. Rakieten and T. L. Rakieten, Brooklyn.—p. 285.
Antibiosis in Colon-Typhoid Group: I. Growth Curves of Two Strains in Synthetic Medium. M. Fulton, Providence, R. I.—p. 301.
"Chromium-Sulfuric Acid" Method for Anaerobic Cultures. L. Rosenthal, Brooklyn.—p. 317.
Studies on Anaerobic Bacteria: XI. Properties of the H Agglutinogens of Mesophilic and Thermophilic Species. Elizabeth McCoy, Madison, Wis.—p. 321.
Leeuwenhoek's Method of Seeing Bacteria. B. Cohen, Baltimore.—p. 343.

Journal of Immunology, Baltimore

33: 173-250 (Sept.) 1937

Antitoxic Titers of Human Subjects Following Immunization with Combined Diphtheria and Tetanus Toxoids, Alum Precipitated. F. G. Jones and J. M. Moss, Indianapolis.—p. 173.
*Studies on Tetanus Toxoid: II. Response of Human Subjects to an Injection of Tetanus Toxoid or Tetanus Alum Precipitated Toxoid One Year After Immunization. F. G. Jones and J. M. Moss, Indianapolis.—p. 183.
Investigation of the League of Nations Standard Requirements for Schick Toxin. E. M. Taylor and P. J. Moloney, Toronto.—p. 191.
Inactivation of Tetanus Toxin by Crystalline Vitamin C (1-Ascorbic Acid). C. W. Jungeblut, New York.—p. 203.
Studies in Experimental Hypersensitiveness in Rhesus Monkey: III. Manner of Development of Hypersensitiveness in Contact Dermatitis. H. W. Straus and A. F. Coca, Brooklyn.—p. 215.
Serologic Behavior of Heated Protein Mixtures. Clara Nigg, New York. —p. 229.
Complement Fixation Reaction in Experimental Equine Encephalomyelitis, Lymphocytic Choriomeningitis and the St. Louis Type of Encephalitis. Beatrice F. Howitt, San Francisco.—p. 235.

Response to Tetanus Toxoid One Year After Immunization.—Jones and Moss tested the blood specimens of forty-one subjects for antitoxic content six months and twelve months after injections of tetanus toxoid. There was a noticeable drop in titer after six months and twelve months in the two groups that received three injections (0.1, 0.2 and 0.2 cc.) and two injections (0.2 and 0.3 cc.) of alum toxoid respectively, while the titer of the group that received three injections (0.5, 1 and 1 cc.) of untreated toxoid remained fairly constant. Apparently, while alum precipitated toxoid produced a greater and more rapid immunity, the immunity dropped over an extended period

to the level stimulated by untreated toxoid. A subsequent dose of tetanus toxoid or tetanus alum precipitated toxoid one year after primary injection increased the antitoxic content of the blood from twenty to fifty times, making a level which is higher and more persistent than that produced by a prophylactic injection of tetanus antitoxin.

Journal Industrial Hygiene & Toxicology, Baltimore

19: 349-468 (Oct.) 1937

Halogenated Hydrocarbons: Their Toxicity and Potential Dangers. W. F. von Oettingen, Wilmington, Del.—p. 349.
Cancer of Human Lung and Animal Experiment. J. A. Campbell, Hampstead, London, England.—p. 449.
Solubility of Quartz in Hydrofluoboric Acid. W. B. Harris, Boston. —p. 463.

Journal of Lab. and Clinical Medicine, St. Louis

23: 1-106 (Oct.) 1937

Comparative Effects of New Insulin Preparations on Blood Sugar Curve: Results with Protamine, Protamine Zinc, Protamine Calcium, "Crystalline" and Regular Insulin. G. B. Myers and F. S. Perkin, Detroit.—p. 1.
Guanidine-like Substances in the Blood: III. Blood Guanidine in Normal Pregnancy, Toxemias of Pregnancy and Cirrhosis of the Liver. J. E. Andes, Erlene J. Andes, Morgantown, W. Va., and V. C. Myers, Cleveland.—p. 9.
*Calcium Tolerance Curves in Paget's Disease of the Bone. Isabel M. London and Alice R. Bernheim, New York.—p. 18.
Absorption Spectrums of Direct and Indirect Reacting Types of Serum Bilirubin. G. E. Davis and C. Sheard, Rochester, Minn.—p. 22.
Anaphylaxis in Decerebrated Monkeys. L. M. Davidoff, N. Kopeloff and Lenore M. Kopeloff, New York.—p. 30.
Blood Studies on Normal and Trichinized White Rabbits. W. W. Wantland, Evanston, Ill.—p. 32.
Multiple Serositis, "Kelly": Pericarditic Pseudocirrhosis of Liver, "Pick." T. L. Ramsey, Toledo, Ohio.—p. 39.
*Iron Metabolism in Hemochromatosis. W. M. Fowler and Adelaide P. Barer, Iowa City.—p. 47.
Weltmann Serum Coagulation Reaction: Preliminary Report. S. A. Levinson, R. I. Klein and P. Rosenblum, Chicago.—p. 53.
"Skin Prints": Simple Technic for Following Individual Lesions in Chronic Skin Disease Such as Psoriasis. J. Krafka Jr., Augusta, Ga. —p. 72.
Comparison of Series of Wassermann and Kline Tests with Respect to Specificity and Sensitivity. R. G. Stillman, New York.—p. 73.
Easily Constructed Respiratory Valve. R. H. K. Foster, Nutley, N. J. —p. 79.
Measurement of Fluorescence Intensity by Photo-Electric Means. D. S. Stevens and W. J. Turner, Chicago.—p. 81.
Biologic Assay of Estrogenic Substances. Evangeline F. Deckert, Elizabeth Mulhall and Carol Swiney, Jersey City, N. J.—p. 85.
Pseudo-Agglutination of Erythrocytes by Alkali. R. D. Barnard, Chicago. —p. 98.

Calcium Tolerance Curves in Paget's Disease of Bone.—London and Bernheim performed 201 calcium tolerance tests on 146 persons, including seventeen patients with untreated Paget's disease of the bone and twenty-two normal subjects. Subjects were instructed to come to the hospital fasting and were given a little chocolate to eat in order to avoid unpleasant reactions, which are likely to follow the intravenous administration of calcium to a fasting subject. From five to ten minutes afterward an initial blood specimen was withdrawn and a uniform test dose of 10 cc. of 20 per cent calcium gluconate solution (0.186 Gm. of calcium) was injected slowly, during four to five minutes. First and second specimens were withdrawn fifteen minutes and two hours after the injection for analysis. It appears that the calcium curve of Paget's disease is notable for an absence of marked deviation from the preinjection level. The curve obtained in Paget's disease, in view of its tendency to resist marked upward deviation, would appear to indicate an increased affinity for calcium on the part of the bones and other tissues or a decreased affinity for calcium on the part of the blood. The former interpretation is in line with the metabolic studies reported by several investigators, showing a retention of calcium by the body in Paget's disease of the bone. In five cases of Paget's disease an almost flat curve was obtained. This was not obtained in any of the normal subjects.

Iron Metabolism in Hemochromatosis.—Fowler and Barer carried out iron-balance studies on four patients who presented the characteristic features of hemochromatosis and, as a control, similar studies were performed on two patients with uncomplicated diabetes mellitus whose diabetes was of approximately the same severity as that in the patients with hemochromatosis. Three patients with advanced stages of hemochromatosis retained no more iron than did two patients with diabetes mellitus. This was true not only when the iron was obtained from the food alone but also when an additional 340 mg. of iron was given in the form of iron and ammonium citrate. This shows that in the late stages of hemochromatosis there is no abnormal retention of iron. The results obtained in the other case are more difficult to interpret, since the studies were of short duration. For the single period of observation an unusually large retention of iron occurred, distinctly greater than that in other cases of hemochromatosis or control subjects. It is obvious from the results of tissue analysis that retention of unusually large amounts of iron must occur at some time in the development of hemochromatosis. The clinical recognition of the disease is difficult or impossible in the early stages before evidence of pigmentation, cirrhosis of the liver and diabetes make their appearance, so that iron-balance studies will be difficult to obtain at that time. The authors encountered one patient in a relatively early stage who had entered the hospital because of an unrelated condition. He presented moderate pigmentation of the skin, slight enlargement of the liver and no glycosuria but a diminished tolerance to dextrose. The results from this patient cannot be considered as conclusive but suggest that iron is retained in excessive amounts in the early stage, although this abnormal retention does not persist in the fully developed case.

Journal-Lancet, Minneapolis

57: 435-474 (Oct.) 1937

Discussion of Protamine Insulin. R. O. Goehl, Grand Forks, N. D. —p. 435.
Anesthesia and Relief of Pain by the General Practitioner. J. S. Lundy and E. B. Tuohy, Rochester, Minn.—p. 438.
The General Symptomatology of Common Rectal and Anal Diseases. J. K. Anderson, Minneapolis.—p. 441.
Feeding Problems in Infancy. G. E. Robertson, Omaha.—p. 444.
Treatment of Burns. W. A. Wright, Williston, N. D.—p. 449.
The Results of Routine Examination of Candidates for Teacher's Certificate at the University of Wisconsin. L. R. Cole, Madison, Wis. —p. 451.
Brucellosis. N. M. Levine, J. A. Myers, Minneapolis, and Elizabeth A. Leggett, Kent, Ohio.—p. 453.
Some Allergic Problems Puzzling to the General Physician. J. A. Rudolph, Cleveland.—p. 457.
Vitamins and Infections of the Eye, Nose, Throat and Sinuses. G. M. Koepcke, Minneapolis.—p. 460.

Journal of Nutrition, Philadelphia

14: 329-434 (Oct.) 1937

Effect of Quality of Protein on Estrous Cycle. P. B. Pearson, E. B. Hart and G. Bohstedt, Madison, Wis.—p. 329.
Studies on Energy Metabolism of the Hen. H. H. Dukes, Ithaca, N. Y. —p. 341.
*Effect of Yeast on Liver Glycogen of White Rats During Hyperthyroidism. V. A. Drill, Brooklyn.—p. 355.
Effect of Adding Copper to Exclusive Milk Diet Used in Preparation of Anemic Rats on Their Subsequent Response to Iron. Margaret Cammack Smith and Louise Otis, Tucson, Ariz.—p. 365.
Identity of the Goldberger and Underhill Types of Canine Blacktongue: Secondary Fusospirochetal Infection in Each. D. T. Smith, E. L. Persons and H. I. Harvey, Durham, N. C.—p. 373.
Immaturity of Organism as Factor Determining Favorable Influence of Lactose on Utilization of Calcium and Phosphorus. R. B. French and G. R. Cowgill, New Haven, Conn.—p. 383.
Toxicity of High Gliadin Diets: Studies on the Dog and on the Rat. D. Melnick and G. R. Cowgill, New Haven, Conn.—p. 401.
Effects of Deficiency of Phosphorus on Utilization of Food Energy and Protein. E. B. Forbes, State College, Pa.—p. 419.

Effect of Yeast on Liver Glycogen During Hyperthyroidism.—Drill studied the change that occurred in the percentage of liver glycogen in hyperthyroid rats, if any, when small amounts of thyroxine were injected daily over a longer period than six days as used by Abelin, Knochel and Spichtin. Yeast, in which vitamins B and G are known, was fed in order to produce a constant weight, or a gain in weight, in rats receiving thyroxine, and the liver of these rats was then analyzed for the percentage of glycogen and compared with control rats. A group of rats on a normal daily diet containing from 2.1 to 2.4 U. S. P. units of vitamin B (B_1) and from 2.4 to 2.6 Sherman units of vitamin G gained in weight and showed normal values of liver glycogen. A group of rats on the same normal diet receiving daily 0.1 mg. of thyroxine subcutaneously lost weight eventually and showed low values for liver glycogen. A group of rats on a normal daily diet containing 54 U. S. P. units of vitamin B and 60 Sherman units of vitamin G and receiving 0.1 mg. of thyroxine subcutaneously

still gained or remained constant in weight and showed normal values for liver glycogen. The change in the vitamin content of the diet of the test rats, as regulated by the amount of yeast, is responsible for the normal value of liver glycogen.

Medical Annals of District of Columbia, Washington

6: 259-284 (Sept.) 1937

Physiologic Response to Massive Infusions of Physiologic Salt Solution. R. A. Cutting, A. M. Lands and P. S. Larson, Washington.—p. 259.
Renal Tuberculosis. R. M. LeComte, Washington.—p. 263.
Subcortical Prefrontal Lobotomy in Treatment of Certain Psychoses. W. Freeman and J. W. Watts, Washington.—p. 267.
Paraldehyde-Benzyl Alcohol Obstetric Analgesia by Kane-Roth Method. H. P. Parker, Washington.—p. 272.
Probable Bacterial Endocarditis Apparently Cured with Sulfanilamide: Report of Case. H. H. Hussey, Washington.—p. 275.
Learning-Disability in Intelligent Children: Symptom of Emotional Disturbance. Agnes B. Greig, Washington.—p. 276.

Military Surgeon, Washington, D. C.

81: 241-320 (Oct.) 1937

Possibilities for Pneumonia Control as Indicated by Present Scientific Knowledge. R. Cole.—p. 241.
Organization of a Laboratory Research Unit U. S. N. R. A. P. Krueger.—p. 255.
The Present Status of Artificial Fever Therapy in Medicomilitary Practice. E. H. Parsons, J. J. White, R. M. Hardaway and Alice Barnes.—p. 258.
Bullet in the Brain: Report of Case. G. L. Johnson.—p. 264.
History of an Ex-Service Man Overcoming Great Physical Handicaps and Still Carrying On. C. D. Ryan.—p. 268.
Vitamin Hysteria. F. J. Vokoun.—p. 270.
Residuals of Gunshot Wounds. C. E. Buswell.—p. 271.
Ménière's Syndrome: Review of Ten Cases. M. M. Kafka.—p. 273.
Fatal Result of Artificial Fever Therapy: Case Report. G. D. Chunn and C. L. Kirkpatrick.—p. 281.
Investigation into Abdominal Complaints of Veterans of the World War. J. W. Rock.—p. 287.

Minnesota Medicine, St. Paul

20: 627-690 (Oct.) 1937

Hypertensive Heart Disease: Its Clinical Pathologic Manifestations. F. D. Murphy, R. M. Woods and J. Grill, Milwaukee.—p. 627.
Health Problems from the Layman's Point of View. C. R. Rorem, Chicago.—p. 642.
Visual Impairment Due to Neglect. F. E. Burch, St. Paul.—p. 646.
*Protein Deficiency Edema. S. Boyer Jr., Duluth.—p. 653.
Serum Treatment of Pneumococcic Lobar Pneumonia. C. N. Hensel, St. Paul.—p. 658.
Use of the Gastroscope. A. C. Kerkhof, Minneapolis.—p. 666.
External Use of Aloes. J. E. Crewe, Rochester.—p. 670.

Protein Deficiency Edema.—Edema may not only be cardiac or renal but also mechanical or obstructive, inflammatory, allergic and nutritive. It is the edema caused by a reduction in the colloid osmotic pressure and in particular that termed nutritional edema, protein deficiency edema, that Boyer discusses. Of the two types of protein having a part in the production of protein deficiency edema, albumin and globulin, the former is of the greater importance. Serum albumin is of greater importance because it exerts an osmotic pressure four times that of the serum globulin. Although for many years the level of serum proteins was definitely associated with the appearance of edema, it has not been until more recent years that this has been recognized in cases other than the so-called nutritional edema. The treatment of protein deficiency edema consists primarily in the administration of protein in large quantities. However, water without salt cannot be retained. In many cases when the serum proteins are at the borderline, that is, when they are at or slightly above the critical level, edema will appear. In these cases the simple restriction of salt from the diet will result in the disappearance of edema. Therefore in treating this type of edema it would appear best to give not only high protein diets but also a salt free or salt low diet with restriction of fluids. The amount of protein given daily should be from 100 to 150 Gm. Animal protein will secure more rapid and satisfactory results, and the control of salt and water intake with rest in bed is advisable. It is possible to compute the amount of protein necessary by giving 1 Gm. of protein per kilogram of body weight plus that which is lost in the urine, if that is the route of protein deprivation. Blood transfusions and the intravenous administration of acacia dextrose are to be resorted to when nothing can be taken orally. The use of mercurial diuretics is questionable and certainly one should defer their use if there is the slightest question of existent renal damage. Ammonium chloride and other salts may be used in an attempt to upset the electrolytic concentration and thus produce diuresis. Edema is a symptom and sign, not a disease, to be interpreted as part of a disease process with the treatment incorporated in that of the original disease.

New England Journal of Medicine, Boston

217: 579-610 (Oct. 7) 1937

Ether versus Chloroform. H. E. Hoff, New Haven, Conn.—p. 579.
Effect of Amniotin and Antuitrin-S in Diabetes Insipidus. H. Blotner, Boston.—p. 592.
Malignant Tumor of Ovary Occurring in a Thirteen Year Old Girl. A. A. Levi, Boston.—p. 595.

Public Health Reports, Washington, D. C.

52: 1369-1402 (Oct. 1) 1937

Further Field Studies on Selenium Problem in Relation to Public Health. M. I. Smith and B. B. Westfall.—p. 1375.
How Expenditures for Selected Public Health Services Are Apportioned. J. W. Mountin.—p. 1384.

Rhode Island Medical Journal, Providence

20: 155-168 (Oct.) 1937

Discussion of Certain Aspects of Diagnosis and Treatment of Trigeminal Neuralgia and Ménière's Syndrome. G. Horrax, Boston.—p. 155.
*Primary Pneumococcus Meningitis. C. A. McDonald and M. Korb, Providence.—p. 158.
Graceful Old Age. C. F. Gormly, Providence.—p. 160.

Primary Pneumococcic Meningitis.—McDonald and Korb report four cases of primary pneumococcic meningitis. In every case lumbar puncture showed intracellular pneumococci in the spinal fluid. In no case did routine examination reveal evidence of a primary pneumococcic infection in the ear, the chest or any part of the body, to which the meningitis might be secondary. The onset was insidious. Nerve signs developed rapidly. Violent motor display was quite characteristic. Death came not later than the third day with respiratory failure. The average duration of the course of the disease was less than three days.

Surgery, St. Louis

2: 493-652 (Oct.) 1937

Os Calcis Fractures, an Improved Treatment. O. W. Yoerg, Minneapolis.—p. 493.
Treatment of Peripheral Vascular Disease by Suction-Pressure Chamber Applied to the Thigh. E. Holman and T. L. Schulte, San Francisco.—p. 502.
Therapy of Surgical Complications of Diabetes Mellitus at Presbyterian Hospital in New York City, 1930-1935. B. C. Smith, New York.—p. 509.
Effect of Complete Intestinal Fistula on Blood Potassium. J. Scudder and R. L. Zwemer, New York.—p. 519.
*Technic of Appendectomy, with Particular Reference to Treatment of Appendical Stump. A. Ochsner, New Orleans, and G. Lilly, Miami, Fla.—p. 532.
Arteriovenous Fistula Involving the Common Carotid Artery and Internal Jugular Vein. I. A. Bigger and K. M. Lippert, Richmond, Va.—p. 555.
*Probable Cause for High Mortality Following Cholecystostomy, Cholecystogastrostomy and Cholecystoduodenostomy in Jaundiced Patients. R. R. Best and N. F. Hicken, Omaha.—p. 566.
Chronic Nonspecific Ulcerative Colitis: Review of 138 Cases. C. W. Monroe, Oak Park, Ill.—p. 575.
Operative Treatment of Pilonidal Sinus, with Especial Reference to Type of Suture Material as Factor in Recurrence. J. E. Dunphy, Boston.—p. 581.
Evaluation of Sterility Indicators. C. W. Walter, Boston.—p. 585.
Intravenous Administration of Fluids Including Blood Transfusion. J. S. Lundy and A. E. Osterberg, Rochester, Minn.—p. 590.
Diverticulum of the Larynx. H. H. Kerr and T. Bradley, Washington, D. C.—p. 598.
Irradiation Sarcoma. H. Wilson and A. Brunschwig, Chicago.—p. 607.
Gravity Pressure and Circulating Hot Water Method of Applying Heat to Pelvic Tissues. P. K. Champion, New Orleans, and C. A. Dwyer Jr., Houston, Texas.—p. 612.

Technic of Appendectomy.—Ochsner and Lilly declare that the inversion without ligation technic is the ideal appendectomy procedure provided the stump can be inverted without contamination of the peritoneal cavity and that hemostasis can be secured. In the technic that they describe, this is accomplished by applying three crushing forceps to the appendical stump and by grasping the crushed sealed stump before the last forceps is removed prior to inversion. Hemostasis is secured by introducing a purse-string suture in such a way that an intramural branch of the appendicular artery is grasped

in the suture. Because the crushed stump is inverted into the lumen of the cecum, there is no danger of subsequent inflammation occurring around this stump and extending to the cecal wall or peritoneal cavity.

Jaundiced Patients.—Best and Hicken believe that it is dangerous to accept the recognized criteria for a patent cystic duct in those jaundice cases which are associated with a malignant condition of the head of the pancreas or the lower end of the common duct. If one cannot definitely insert a probe through the cystic duct and into the common duct, there are two alternatives: either an immediate cholangiograph can be made to determine the exact status of the cystic duct, or the common duct can be directly attacked either by choledochostomy or choledochoduodenostomy. If the cholangiogram proves the cystic duct to be obstructed, the latter procedure is indicated. If a probe cannot be directed through the cystic duct, immediate cholangiography is not indicated in most instances but an attack should be made on the common duct for biliary decompression. Three cases are reported in which biliary decompression was not accomplished because of obstruction of the cystic duct and the patients died because of the extra load of operation. These cases also demonstrate the unreliability of a patent cystic duct unless a probe can be inserted through the duct. Although drainage of the common duct and duodenal anastomosis of the common duct are technically more difficult than utilization of the gallbladder, the mortality rate is decidedly lower. Reestablishing the flow of bile from the liver to the gastro-intestinal tract becomes a vital necessity when the intrinsic or extrinsic obstruction that is blocking the lower end of the common duct cannot be removed. Many times a two stage procedure is necessary: short circuiting or drainage to relieve the jaundice and improve the general condition of the patient, and the removal of the obstructive agent.

Virginia Medical Monthly, Richmond

64: 365-428 (Oct.) 1937

Principles Guiding Treatment of Generalized Edema. F. H. Smith, Abingdon.—p. 365.
Discussion of Serious Medical Complications During Pregnancy. J. Bear, Richmond.—p. 372.
*Use of Autohemotherapy in Treatment of Psoriasis and Herpes Zoster: Preliminary Report. E. E. Barksdale, Danville.—p. 378.
The Problems of Early Syphilis. O. L. Anderson, Richmond.—p. 381.
Treatment of Neurovegetative Dystonia. A. H. Moore, Doylestown, Pa.—p. 386.
Treatment of Sciatic Pain. R. M. Hoover, Roanoke.—p. 390.
Alternative Solutions Proposed for Medico-Economic Problems. W. B. Porter, Richmond.—p. 392.

Autohemotherapy in Treatment of Psoriasis and Herpes Zoster.—The method that Barksdale employed in treating two cases of psoriasis and seven of herpes zoster entailed the removal of 6 or 8 cc. of blood from the cubital vein and injecting it immediately into the gluteal muscle before it had time to clot. The two cases of psoriasis responded well to a routine consisting of autohemotherapy, anthralin ointment locally and a diet rich in milk and butter. Autohemotherapy not only shortens the duration of pain of herpes zoster but also shortens the course of the disease. It is as good as any other form of therapy that has been used in the past, if not a specific in the treatment of herpes zoster. The majority of patients gave a history of the absence of milk or butter from their diet. Patients with psoriasis were advised to partake of a diet rich in milk and butter, supplemented by carotene in oil or cod liver oil, the local application of anthralin ointment, which is a chrysarobin derivative, ultraviolet radiation and autohemotherapy.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

45: 527-580 (Oct.) 1937

Low Back Pain, with Especial Reference to Dislocation of Intervertebral Disk and Hypertrophy of Ligamentum Flavum. H. A. Brown, San Francisco.—p. 527.
Extraperitoneal Cesarean Section: Using the Latzko Method. A. Bernstein and L. I. Breitstein, San Francisco.—p. 532.
Evaluation of Physiotherapeutic Modalities in Jaw and Associated Fractures. H. H. Weisengreen, Fresno, Calif.—p. 537.
Basic Factors Involved in Proposed Electrical Methods for Measuring Thyroid Function: III. Phase Angle and Impedance of Skin. A. Barnett, New York.—p. 540.
Malignancy of Thyroid. C. W. Mayo, Rochester, Minn.—p. 555.
Production of Increase in Metabolic Rates of Thyroidectomized Rabbits by Certain Pituitary Extracts. D. K. O'Donovan and J. B. Collip, Montreal.—p. 564.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

10: 637-700 (Sept.) 1937

Radiologic Aspect of Bronchiectasis in Children. C. G. Teall.—p. 637.
Radiating Surfaces: Study on Introduction of New Method in Gamma Ray Treatment: Part I. J. van Roojen.—p. 650.
Eventration of Diaphragm. A. C. Singleton.—p. 677.
Factors Determining Detection of Shadows in Radiographs. A. E. Barclay and K. J. Franklin.—p. 689.

British Medical Journal, London

2: 605-642 (Sept. 25) 1937

Wider Issues of Health Legislation in Industry. L. P. Lockhart.—p. 605.
Id. R. E. Lane.—p. 608.
Id. E. Bevin.—p. 610.
Use of Adult Serum in Measles: An Account of an Epidemic in a Public School. K. Le Fleming.—p. 612.
Value of Continuous Negative Pressure in Surgery. M. J. Bennett-Jones.—p. 613.
Benzedrine: Review of Its Toxic Effects, with Report of Severe Case of Anemia Following Its Use. I. J. Davies.—p. 615.
*Pernicious Anemia with Diabetes Mellitus. H. G. McGregor.—p. 617.

Pernicious Anemia with Diabetes Mellitus.—McGregor presents two cases of pernicious anemia in association with diabetes mellitus. There are certain conditions common to the two which might predispose to their simultaneous occurrence. A point about which there is no clarity is whether the diabetes should be considered as a complication of the anemia or vice versa. In case 1 the pernicious anemia was known to have preceded the diabetes, in case 2 it was probably the reverse, and in the majority of reported cases it was the diabetes that developed first. Figures as to the frequency of the association of the two diseases are suggestive of something more than chance, but they are no more than suggestive. Though achlorhydria, longer duration of life because of improved treatment, the factor of middle age and hereditary tendencies are factors common to the two diseases, especially when diabetes is the primary condition, there still remain cases in which pernicious anemia was the first to develop. In the latter circumstance certain changes in carbohydrate metabolism that are known to occur in anemia seem more likely to be the agents which lead to the two diseases. Evidence is contradictory and no adequate explanation has been offered regarding the mechanism of production of high blood sugar and abnormal sugar tolerance in pernicious anemia or the occasional occurrence of pernicious anemia complicating diabetes. Most authors consider that the phenomenon is a chance combination.

2: 643-688 (Oct. 2) 1937

Conservative Treatment of Cancer of the Breast. G. Keynes.—p. 643.
Tumors of Bone: Responsibilities of the Pathologist. J. S. Young.—p. 647.
*Thoracoplasty with Extrafascial Apicolysis. C. Semb.—p. 650.
Cerebral Edema in Certain Mental Disorders. C. Lovell.—p. 656.
*Nonsuppurative Intracranial Complications of Otitis Media. A. A. McConnell.—p. 659.

Thoracoplasty with Extrafascial Apicolysis.—Semb maintains that to produce a free mobilization of the upper lobe in selective collapse the thoracoplasty should generally be combined with apicolysis. His method of apicolysis is characterized by three chief points: (1) apicolysis in the extrafascial plane by cutting the so-called suspension bands of the lung sharply or bluntly, (2) a radical rib resection according to the extent of the apicolysis and (3) preparation of an extrafascial space by cutting the periosteum of the ribs and the other tissues in such a manner that they are not loosened from the surface of the lung. This extrafascial type of apicolysis gives both relaxation and subsequent fixation of the collapsed part of the lung. His follow-up examinations have shown that the cavity closes gradually by retraction in the course of weeks or months following operation. An extensive local block anesthesia—with 0.5 per cent procaine hydrochloride and 1:2,000 pontocaine hydrochloride—has been used successfully. In the first stage from three to five upper ribs are resected, usually the whole of the first, most of the second, and decreasing lengths of the third and fourth ribs. The apicolysis is carried out as an open dissection. The intercostal bundles, nerves, vessels and the periosteum of the upper ribs are cut. The adhesions or "bands" between the apex of the lung and the neurovascular trunk, the

vertebrae and the mediastinum are dissected free and severed. The intercostal bundles are usually excised, as they are liable to necrosis. The resection of the subjacent ribs is usually performed in one or more later stages. Simultaneously parts of the anterior stumps of the previously resected upper ribs are usually resected. The best time for the second stage is within four weeks. Later the regenerated ribs are resected, and sometimes two or three transverse processes. The extent of the operation in each case should be in accordance with the localization of the cavitation, so that the collapse becomes as effective —and at the same time as limited to the diseased part of the lung—as possible. An exact roentgenographic localization of the cavity in two planes is therefore necessary. The usual first stage varies between resection of three to five ribs and apicolysis from a posterior incision. The first stage may be performed as a resection of the anterior parts of the first and second ribs only. The apicolysis is then performed from behind in the second stage. The mortality rate within two months of operation has been reduced to about 3 per cent by operation in several stages. Collapse of the cavity and a sputum free from tubercle bacilli have been achieved in about 90 per cent of the surviving patients. Of all the cases 90 per cent had partial thoracoplasty with resection of eight ribs or less. Only 10 per cent required total thoracoplasty. In seventeen cases artificial pneumothorax had been induced on the other side and was present during the thoracoplasty. These patients tolerated the operation surprisingly well, probably because of a stabilized mediastinum. There were no deaths. In fourteen of the seventeen cases complete collapse of the cavity and a sputum free from tubercle bacilli was achieved. In four cases artificial pneumothorax on the other side was induced after the thoracoplasty. The operation has also been tried after thoracoplasty performed previously by other methods has failed to produce complete collapse. Complete collapse of the cavity was achieved in fourteen of sixteen patients who were operated on a second time in this way.

Nonsuppurative Complications of Otitis Media.—McConnell classifies intracranial complications of otitis media as suppurative and nonsuppurative. Nonsuppurative complications are of two kinds, one an encephalitic lesion which gives rise to both focal and general symptoms and the other a derangement of the amount or of the circulation of the cerebrospinal fluid, resulting in the accumulation of the fluid and a rise in the general intracranial pressure. When symptoms and signs of increased intracranial pressure develop in the course of otitis media and clinical methods fail to establish a definite diagnosis, ventricular puncture is safer and more informative than lumbar puncture and should be used first. If a communicating hydrocephalus is found, lumbar puncture may then be used for treatment.

East African Medical Journal, Nairobi

14: 187-218 (Sept.) 1937

Headache in Kenya. H. L. Gordon.—p. 189.
Enquiry into Diet and Nutrition Among Indian School Children in Kampala, with Especial Reference to Consumption of Milk. R. E. Barrett.—p. 199.
Prontosil in Appendicitis. J. Dundas.—p. 208.

Journal of Hygiene, London

37: 489-616 (Oct.) 1937

Studies in Declining Birth Rate, England and Wales: I. The Northern Counties: II. Summary of Results for All Areas. W. J. Martin.—p. 489.
Antigenic Structure of Influenza Viruses: Preparation of Elementary Body Suspensions and Nature of Complement Fixing Antigen. L. Hoyle and R. W. Fairbrother.—p. 512.
Filtration and Centrifugation of Viruses of Rabbit Fibroma and Rabbit Papilloma. M. Schlesinger and C. H. Andrewes.—p. 521.
*Growth of Streptococcus Pyogenes in Milk Stored at Atmospheric Temperatures. E. J. Pullinger and Audrey E. Kemp.—p. 527.
Sterilization of T. A. B. C. Vaccine. S. G. Rainsford.—p. 539.
Simple Tellurite-Chocolate-Agar Medium for Typing and Isolation of Corynebacterium Diphtheriae. G. A. W. Neill.—p. 552.
Variation of Specific Phase of Salmonella Amersfoort N. Sp. M. W. Henning.—p. 561.
Physical and Emotional Periodicity in Women. R. A. McCance, M. C. Luff and E. E. Widdowson.—p. 571.

Streptococcus in Milk Stored at Atmospheric Temperatures.—Pullinger and Kemp tried to determine whether Streptococcus pyogenes can multiply in milk stored under normal conditions. The main commercial grades of milk have been investigated; i. e., raw (graded and ungraded), pasteurized and sterilized milk. It was found that Streptococcus pyogenes multiplies readily in sterilized milk stored at 22 and 18 C., and more slowly when stored at 15 C. In fresh raw milk this organism begins to multiply slowly only after from forty-eight to seventy-two hours of storage at from 18 to 22 C. In laboratory pasteurized milk the result is similar, but both commercially pasteurized milk and raw graded milk bottled for distribution sour too rapidly for multiplication to take place after artificial contamination. These facts suggest that widespread epidemics are rarely due to extensive multiplication of Streptococcus pyogenes in milk during commercial or household storage. The initial degree of contamination of milk with Streptococcus pyogenes has no influence on this organism's ability to multiply during storage. The failure of Streptococcus pyogenes to multiply during storage is due to its natural reluctance to grow at atmospheric temperatures, the bacteriostatic action of the milk and the readiness with which saprophytic bacteria multiply at atmospheric temperatures. Infected cows play a major part in the spread of milk-borne Streptococcus pyogenes epidemics. Routine investigation of apparent milk-borne epidemics should include the immediate bacteriologic examination of an individual sample of milk from every cow concerned in the supply under suspicion.

Journal of Laryngology and Otology, London

52: 589-660 (Sept.) 1937

*Injuries of Frontal and Ethmoidal Sinuses, with Especial Reference to Cerebrospinal Rhinorrhea and Aeroceles. H. Cairns.—p. 589.

Injuries of Frontal and Ethmoidal Sinuses.—Cairns divides cases of cerebrospinal rhinorrhea into four groups: those that occur in the acute stage of a head injury, those that occur as delayed complications of a head injury, those produced during operation on the cranium or the accessory sinuses and cases of spontaneous cerebrospinal rhinorrhea. In addition he considers cases of brain abscess, meningitis and intracranial aerocele that arise as a result of injury to the frontal and ethmoidal sinuses. He gives cases that illustrate the various ways in which cerebrospinal rhinorrhea and intracranial infection may occur after fractures of the frontal and ethmoidal sinuses produced by violent impacts on the forehead or face. In some cases, and particularly in airplane accidents, the upper and lower jaws are also fractured, and there is dissolution of the bony connections of the facial bones to the base of the skull. In fractures of the frontal sinus and cribriform plate there is serious risk of intracranial infection not only immediately after the accident but also at a later period, when any new catarrhal infection of the nasal passages may break through barriers weakened by previous injury. Infection usually takes the form of leptomeningitis, but sometimes it may spread through the substance of the brain, producing abscess of the frontal lobe or purulent ependymitis. More active measures should be exercised in repairing the injured dura by means of transfrontal operation and sutures, or fascial grafts. The indications for urgent surgical intervention are clear in cases of injury to the dura during intranasal operation on the ethmoidal and sphenoidal sinuses and in cases of delayed cerebrospinal rhinorrhea and aerocele following head trauma. In the acute stage of frontal and ethmoidal injuries the case for immediate operation has not yet been clearly established. Greater accuracy of diagnosis of the side and site of injury to the cranial base is necessary before immediate operation, with the attendant risk of aggravating shock already present, can be justified. Much can be done along these lines by more thorough roentgenography of the anterior cranial fossa. Congenital deficiencies in the cribriform plate may contribute to the production of cerebrospinal rhinorrhea, both spontaneous and traumatic, and these also can be disclosed by roentgenograms.

52: 661-732 (Oct.) 1937

Deaf Mutism of Traumatic Origin: Case. C. S. Hallpike.—p. 661.
*Tuberculous Ulcerations of Mouth and Pharynx. F. C. Ormerod.—p. 675.

Tuberculous Ulcerations of Mouth and Pharynx.—In analyzing the cases seen at Brompton Hospital in the last fifteen years, Ormerod has found statistics of nearly 17,000 cases referred to the throat department, in about two thirds of

which there was tuberculous infection and, in the others, a nontuberculous condition of the chest. During this period there were 3,120 cases of tuberculosis of the larynx. There were twenty cases of tuberculosis of the tonsil, thirty-two of the pharynx, four of the postnasal space and two of the lips. He has analyzed more critically the cases seen in the last five years, of which there were twenty-one of tuberculosis of the mouth and pharynx. Patients having tuberculous lesions of the mouth and pharynx are slightly younger than those having disease of the larynx, mostly being from 20 to 30 years of age. The patients with laryngitis live longer, and they may overlap into the next decade, so the incidence is probably much the same. Tuberculous disease in the pharynx and mouth is nearly always a complication of severe disease in the lung. It is a bad sign and shows that the patient's resistance to the disease has broken down. Of the twenty-one cases, both lungs were involved in nineteen, and in many cases all three zones of the lungs were implicated to some degree. Examination of the sputum was positive in fifteen, negative in three and there was no record of it in three others. It was perhaps positive in two of these. The larynx was not involved in six cases. In one case there was congestion of the vocal cords, and in two there was swelling of both ventricular bands. In the remaining twelve there was severe laryngeal disease. In appearance these ulcers are flat with an irregular edge, not deep. They have a slightly undermined edge; the base is granular and covered with tenacious mucus. These patients suffer from a great outflow of mucus, one of their major troubles, necessitating perpetual spitting and swallowing. The presence of mucus on the base of the ulcer assists the diagnosis. The chief symptom in the pharyngeal cases is the extreme pain, so that swallowing is difficult. Ten cases are presented that illustrate some of the types of ulcerations that are encountered.

Journal of Physiology, London

90: 371-510 (Sept. 17) 1937

The Female Prostatic Gland and Its Reaction to Male Sexual Compounds. V. Korenchevsky.—p. 371.
Action of Anticoagulants. J. O. W. Barratt.—p. 377.
*Rôle of Appetite in Control of Body Weight. N. F. Maclagan.—p. 385.
Ascending Spinal Pathways of Pupillodilator Fibers. A. A. Harper and B. A. McSwiney.—p. 395.
Radiographic Examination of Dental Tissues in Relation to Their Histologic Structure. J. Thewlis.—p. 403.
Excitation of Action Potential of Molluscan Unstriated Muscle. C. M. Fletcher.—p. 415.
Some Characteristics of Action of Urine on Amphibian Melanophores. S. H. Raza and W. R. Spurrell.—p. 429.
Maintenance by Estrin of Luteal Function in Hypophysectomized Rabbits. J. M. Robson.—p. 435.
Oxidation of Glucose as Function of Its Supply. M. Wierzuchowski. —p. 440.
Behavior of Muscle Following Injection of Water into the Body. M. Grace Eggleton.—p. 465.
Reflexes from Bladder and Large Intestine. A. E. Barclay and K. J. Franklin.—p. 478.
Rate of Excretion of India Ink, Injected into Lungs. A. E. Barclay and K. J. Franklin.—p. 482.
Histamine-like Activity of White Blood Cells. C. F. Code.—p. 485.
Isolation of Histamine from White Cell Layer of Centrifugated Rabbit Blood. C. F. Code and H. R. Ing.—p. 501.

Rôle of Appetite in Control of Body Weight.—Maclagan gave an unlimited amount of food to rabbits for six hours each day and measured the actual amounts of food eaten in relation to physiologic and pharmacologic influences. Rabbits are little affected by psychic influences and their appetites are quite unimpaired by any incidental manipulation. Mechanisms possibly involved in the normal regulation of body weight are discussed, special stress being laid on the control of the appetite as the most important single factor. Appetite is defined for the present purpose as the amount eaten in a standard time when an unlimited diet is presented to the animal, and it is not intended to denote a psychologic state. A study has been made of the appetite in rabbits with the following results: The appetite normally reaches a maximum after a fast of eighteen hours. It is increased above this maximum by a period of undernutrition. A simple fast of longer (or shorter) than eighteen hours reduces the appetite. The effects of various drugs on the appetite have shown that insulin is the only one on the plus side. Pitressin and atropine had to be given in rather large doses to produce any effect; the former caused slight diarrhea in three of eight animals and the latter gave full dilatation of the pupils.

Lancet, London

2: 665-722 (Sept. 18) 1937

The Psychologic Factor in Cardiac Pain. E. Wittkower.—p. 665.
Action of Normal and Diabetic Serums on Animal Liver Glycogen in Vivo and in Vitro. O. L. V. De Wesselow and W. J. Griffiths.—p. 670.
Laryngeal Diphtheria and Tracheotomy. W. Napier.—p. 673.
*Inhibition of Menstruation and Ovulation by Means of Testosterone Propionate. S. Zuckerman.—p. 676.
Absorption and Excretion of Iron. R. A. McCance and E. M. Widdowson.—p. 680.
*Infective Warts in Workers Using Bone Glue. A. I. G. McLaughlin and J. W. Edington.—p. 685.
Food and Fluid in Typhoid Fever. S. W. Smith.—p. 686.

Inhibition of Menstruation with Testosterone Propionate.—Zuckerman observed that the administration of 25 mg. of testosterone propionate twice a week to normal mature female rhesus monkeys stopped the menstrual cycle during the period of injections (up to seven months). The internal reproductive organs were not injured by the treatment, and in one animal menstruation recurred about a week after the last injection. Follicular growth and luteinization were both inhibited. Apart from enlargement of the clitoris, no other significant clinical changes occurred. It is suggested that testosterone propionate may be of clinical value for the induction of temporary sterility and the control of uterine bleeding.

Infective Warts in Workers Using Bone Glue.—McLaughlin and Edington report an outbreak of warts that occurred in a cardboard box factory. On investigation nine girls were found to have warts, mainly on the dorsal aspect of the hands and fingers, especially on the skin just proximal to the knuckles. All nine girls during their work came in contact with bone glue. Two other girls who also worked with glue had no warts. It was learned that warts on the hands of a worker were first noticed about three years previously, and nearly all the affected girls gave a history of having had recurrent warts for at least two years. Clinical experiments were made on two groups of volunteers (four in each group). One group was treated with glue obtained from the pots of glue used by the girls at their work, and the other group with glue which was of the same variety (obtained from the factory stock) but was made up in the laboratory and had not been handled by any of the workers. The glue in each case was applied once a week to the back of the left hand, where it was well rubbed in and left in place for three or four hours. It was established that the pots of glue in use in the factory had been infected with wart virus and were being reinfected by girls who had warts on their hands. Therefore all girls suffering from warts were taken away from the work involving contact with glue and sent to the hospital for treatment. They were not allowed to handle glue until the warts had disappeared entirely. No fresh or recurrent cases have arisen since this procedure was adopted. It is concluded that the glue became infected while it was on the working benches, because here it was at a temperature below the lethal point for the wart virus. The original infection had probably been introduced by the first infected worker who had had her hands infected outside the factory.

South African Medical Journal, Cape Town

11: 629-662 (Sept. 25) 1937

Comparative Study of Formation of Antibodies in the Serum of Persons Treated with Three Types of Typhoid Vaccine. W. Lewin, J. H. S. Gear and D. Landau.—p. 629.
Medical Establishments and Institutions in the Cape: III. Civil Hospitals, Prisons and Reformers. P. W. Laidler.—p. 635.
Id.: IV. Somerset Hospital, the Slave Hospital and the First Pauper Establishment. P. W. Laidler.—p. 641.
So-Called "Vitamin F." H. R. Hudson.—p. 650.
Biochemical and Biologic Investigation of Strains of Corynebacterium Diphtheriae Occurring in Port Elizabeth and Environs. N. Emmerson. —p. 652.
Control of Species of Chironomus Meigen (Diptera Chironomidae in an Artificial Lake by Increasing the Salinity. B. de Meillon and F. C. Gray.—p. 658.
*Immunization Against Typhoid Fever by Means of a Single Injection of Typhoid Endotoxoid Vaccine. E. Grasset, W. Lewin and T. van der Merwe.—p. 660.

Immunization Against Typhoid.—Grasset and his associates prepared a batch of typhoid endotoxoid vaccine with an antigenic concentration about 60 per cent higher than the vaccine administered in two injections, 0.75 cc. of which was injected subcutaneously in the deltoid region in a group of

thirty-nine young European adults. After fourteen days the average H agglutinin titer in the serum of the inoculated persons was 1:1,500, and the average O titer 1:400. The average titers three weeks after the inoculation were 1:1,000 and 1:400 respectively, and after four and one-half months the corresponding titers were 1:200 and 1:75. Thus a single injection of this vaccine produced an average O agglutinin titer higher than that produced by the vaccine of less antigenic content, but the H titers showed no gross difference. The average agglutinin titers produced by the single injection of the vaccine of higher antigenic concentration, however, dropped more rapidly than those produced by three injections of the weaker vaccine. Six non-European adults were inoculated subcutaneously in the deltoid region with 0.5 cc. of endotoxoid vaccine the antigenic concentration of which was double that used in the group of thirty-nine Europeans, and thirty-four non-Europeans from 7 to 15 years of age were inoculated subcutaneously with the same vaccine. The dosage for children up to 10 years of age was 0.2 cc., and for the remainder 0.3 cc. At the same time a further group of similar ages was inoculated by means of two injections of the vaccine of 60 per cent lower antigenic concentration. No gross difference in the clinical reactions was observed between the two groups. Moderate local reactions were observed, but there was no marked general disturbance. On the results obtained from these preliminary experiments a field trial was made of the single injection method for typhoid prophylaxis. An experiment was conducted on the non-European labor complement of the Van Ryn Deep Gold Mine. The endotoxoid used was of similar antigenic concentration to that injected into the thirty-nine European adults. The mine laborers, however, were given 1 cc. subcutaneously in the pectoral region. At the end of July 1937, 5,445 individuals of a total personnel of 6,652 had been so treated. In no case did the inoculation cause a reaction sufficient to prevent the laborer from continuing his work. Nine cases of typhoid occurred after immunization by the single inoculation method had been instituted. Of these, eight occurred in uninoculated persons with two deaths, and one in an inoculated person, a nonfatal case. The latter person, however, had been inoculated only four days before his admission to hospital suffering from the disease. During 1936 a total of fifty-two cases of typhoid occurred, all of them in uninoculated individuals. The similarity of the results obtained in this investigation to those of large scale immunization of non-European Rand mine laborers by means of two injections of typhoid endotoxoid vaccine suggests that the single inoculation method has proved efficacious in the prevention of typhoid. These preliminary results justify an extensive field trial in which the two methods can be strictly compared. It appears that a single injection of typhoid endotoxoid vaccine of high antigenic concentration produces a definite degree of immunity. The duration of the immunity afforded is, however, unknown.

Tubercle, London

19: 1-48 (Oct.) 1937

Bronchography Following Thoracoplasty. H. J. Robinson.—p. 1.
Blood Examinations in Pulmonary Fibrosis of Hematite Iron Ore Miners. J. Craw.—p. 8.
How Long Should Collapse Therapy Be Delayed? G. Marshall.—p. 19.
*Inhibitory Effect of Human Saliva on Growth of Tubercle Bacilli. E. Piasecka-Zeyland and J. Zeyland.—p. 24.
The Association of Intrathoracic and Extrathoracic Tuberculosis. C. K. Petter.—p. 28.

Inhibitory Effect of Saliva on Tubercle Bacilli.—Piasecka-Zeyland and Zeyland examined the direct action of human saliva on tubercle bacilli. They repeated the experiments many times, using the saliva of the same subjects to check the results in order to convince themselves of the indicated fact that human saliva exerts an inhibitory effect on the growth of tubercle bacilli. The protracted heating at 56 C. of the saliva is without any influence on the observed inhibitory effect. They believe that the decrease in the numbers of colonies after treatment with saliva is not the result of an agglutination of the bacilli by the saliva. At present the experiments allow them to conclude that in certain circumstances the addition of human saliva inhibits the growth of tubercle bacilli. This effect depends not only on individual variations but also, in a minor degree, on unknown factors, as is evident by slightly varying results in the particular experiments.

Mémoires de l'Académie de Chirurgie, Paris

63: 971-1036 (Oct. 13) 1937. Partial Index

Banti's Disease. P. L. Mirizzi.—p. 983.
Isolated Palmar Luxation of Inferior Extremity of Ulna, Treated with New Technic of Sauvé and Kapandji. Vergoz and Choussat.—p. 992.
Anterior Gastro-Enterostomy. A. Chalier and V. Richer.—p. 1000.
Subperiosteal Resection of Tibia for Osteomyelitis: Two Cases. B. Desplas.—p. 1016.
*Transmural Injection of Iodized Oil for Preoperative and Postoperative Exploration of Large Pulmonary Abscess. P. Pruvost and J. Quénu.—p. 1025.

Transmural Injection of Iodized Oil in Pulmonary Abscess.—Pruvost and Quénu decided to inject iodized oil by means of a needle through the thoracic wall. This method is not entirely new, but it has been criticized as often unsuccessful and not exempt from such risks as hemorrhage, the extension of infection and gaseous embolism. The authors, however, cite reports from the literature and three cases of their own observation in which the injection of iodized oil through the thoracic wall proved simple. The injection of a small quantity of the opaque oil gives exact information about the location and the form of the cavity. It is advisable not to inject more than 10 cc. A comparison of roentgenograms made with and without the contrast medium clearly demonstrates the superiority of those made with the opaque oil. On the basis of the precise information provided by them, it was possible to establish in each case the best way of approach and the shortest and most favorable route for drainage. After the operation, the oil is injected through the drain to observe the gradual filling up of the cavity and the selection of the best time for the cessation of the drainage. To free the method from possible risks, it is essential to select the cases carefully and not to neglect essential precautions. The puncture should be made only after a complete clinical and roentgenologic examination of the patient, which reveals an abscess of considerable size and of relatively superficial location. It is essential to select with care the site of puncture. The needle should not be too thick; in order that the oil may pass easily, it should be sufficiently heated. It is necessary to aspirate with the syringe while the needle is introduced and while it is withdrawn. Iodized oil should be injected only if purulent fluid is withdrawn or if there is an odor. Iodized oil is well tolerated. A part of it is expelled through the bronchial passage during the hours following the examination. The remainder is gradually evacuated or absorbed. The authors reach the conclusion that this transthoracic injection of iodized oil is a valuable aid before and after the operation for a large pulmonary abscess.

Presse Médicale, Paris

45: 1167-1482 (Oct. 20) 1937

Antipyrine in Treatment of Acute Articular Rheumatism. L. Bouchut and M. Levrat.—p. 1467.
*Efficacy of Intravenous Injections of Sodium Bromide and of Atropine Sulfate in Treatment of Gastric and Duodenal Ulcer. A. Landau and W. Hejman.—p. 1468.

Sodium Bromide and Atropine Sulfate in Gastric Ulcer.—Landau and Hejman resorted to the use of sodium bromide and atropine in three refractory cases of gastric ulcer. The sodium bromide was given intravenously in doses of 10 cc. of a 10 per cent solution and the atropine sulfate was given in doses of 1 mg. The first patient was given forty-nine injections in all and the other two received twenty-seven and fifteen, respectively. The patients tolerated the injections well. Occasionally they complained of dryness in the mouth, but otherwise there were no complaints. The pains commenced to subside after the first few injections. The general condition and the weight improved and roentgenologic examinations revealed the gradual decrease in the size of the niche. Discussing the mode of action, the authors suggest that the sodium bromide inhibits the central nervous system and the irritations arising there and that the atropine acts on the terminations of the vagus nerve in the gastric and duodenal mucosa. This interrupts the vicious circle which is based on the instability of the sympathetic nervous system. The new conditions favor the cicatrization of the ulcer, which in turn diminishes the instability of the sympathetic. The authors conclude that this treatment represents progress in the conservative treatment of gastric ulcer.

Schweizerische medizinische Wochenschrift, Basel

67: 961-992 (Oct. 9) 1937. Partial Index

Studies on Seasonal Fluctuations of Vitamin C Content of Mother's and Cow's Milk, on Vitamin C Requirements of Nurslings and on Vitamin C Supply of City Population of Switzerland. T. Baumann.—p. 962.
Prophylactic Treatment of Children from Mothers with Latent Syphilis. Bernheim-Karrer.—p. 965.
Glycogen Disease. Margrit Esser and S. Scheidegger.—p. 970.
*Cerebellar Atactic Form of Heine-Medin's Disease. E. Glanzmann.—p. 972.
Diagnosis of Appendicitis During Childhood. E. Hagenbach.—p. 974.
*Pneumococcic Peritonitis During Childhood. Helene Mundorff.—p. 982.

Cerebellar Atactic Form of Poliomyelitis.—Glanzmann reviews the literature on the cerebellar atactic form of poliomyelitis and describes two cases. The onset is generally slow and the patients usually complain about fatigue in the legs and occasionally also in the arms. The weakness in the legs becomes so severe that the children are either unable to walk or, when attempting to do so, they stagger. The disorder may take its course without fever or with low fever. As the walk becomes more and more atactic, the children develop a tendency to fall toward one or the other side. A tendency to fall backward is comparatively rare. Analysis of the ataxia revealed in the author's cases the absence of Romberg's swaying, but in a case reported by Wieland this symptom was present. The finger-nose experiment often fails; in the knee-heel test, the child finds the knee only after long searching and in aiming movements post-pointing with hand and foot is observed. It is interesting that the signs of meningeal irritation which ordinarily are frequent in poliomyelitis seem to be entirely absent in the cerebellar atactic form. There is no rigidity of the neck, no spine sign and even Amoss's sign may be lacking. There are only indications of Kernig's sign and of the positive Lasègne sign. The four cardinal symptoms that are so important for the diagnosis of poliomyelitis fail completely in the cerebellar atactic form. Of especial interest is the lack of localized paralysis of the extremities. The musculature of the back and of the extremities show only a surprising lack of tonus and a more or less pronounced motor weakness. The cutaneous reflexes, particularly the abdominal and the cremasteric, are frequently increased, as are also occasionally the plantar reflexes. This increase in the cutaneous reflexes seems to indicate an irritation in the cerebral reflex arcs. The behavior of the tendon reflexes varies; they may be increased in both extremities or in only one and reduced or abolished in the other. In the two reported cases, the patellar and achilles tendon reflexes were abolished. The lumbar puncture reveals only a slight or no increase in pressure. The spinal fluid is clear; the Pandy reaction is positive and the Nonne reaction usually negative. As regards the clinical course, the author says that complete cure is the usual outcome. That this cerebellar atactic form is a form of poliomyelitis is proved by the fact that it occurs at the time of epidemics and that transitional forms exist. The author suspects that the process is localized in the brain stem and in the cerebellum.

Pneumococcic Peritonitis During Childhood.—According to Mundorff, pneumococcic peritonitis still presents a much disputed problem, for the etiology, diagnosis, therapy and prognosis have not been completely clarified. At the children's clinic in Basel, thirty-three cases of pneumococcic peritonitis have been observed in forty years. In analyzing this material, the author found a predominance of children from rural districts. She says that this observation, as well as the fact that most of the patients were girls, has been made by several authors. The primary form of pneumococcic peritonitis has a sudden onset with diarrhea, high fever, small soft pulse, general unrest and dyspnea; that is, the aspects are almost those of a true toxemia. The local examination usually reveals sensitivity to pressure over the entire abdomen. The abdominal respiration is not so noticeably repressed as in appendicitis. Among the thirty-three cases there were seventeen with an acute onset and the aspects of a severe toxic process. The leukocyte count was high (between 16,000 and 34,000). Nine of the seventeen patients died. Death always followed within a few hours or, at the latest, three days after the intervention. In the other eight children, recovery required from four to eight weeks and complications such as pneumonia, nephritis and late abscesses developed. The aspects of secondary pneumococcic peritonitis, which develops in the course of other pneumococcic infections, are quite different from those of the acute or primary form. In four of the sixteen children with the secondary form of pneumococcic peritonitis, the previous history revealed pneumonia. In the majority of the cases there developed within two or three weeks a generalized peritonitis, or, as happened in eight cases, a typical umbilical abscess, which on incision yielded a creamy pus that contained pneumococci. Five children died and eleven recovered. The hospitalization lasted from several weeks to five months. Of the complications, the pulmonary ones were the most frequent. In two instances rib resection had to be done on account of empyema. The author gained the impression that the secondary form of pneumococcic peritonitis has a more favorable prognosis than has the primary form.

Annali di Ostetricia e Ginecologia, Milan

59: 903-1019 (Aug. 31) 1937

Curability of Gynecologic Diseases by Salsomaggiore Mineral Waters. E. Alfieri.—p. 903.
*Influence of "Time Factor" in Actinic Sterilization of Ovary. E. Momigliano.—p. 925.
Anatomic Changes in Ovaries of Syphilitic Fetuses. F. Matteace.—p. 957.
Renal Function in Pregnancy as Tested by Rehberg and Ferro-Luzzi Methods. S. C. Russo.—p. 973.

Actinic Sterilization of Ovary.—In experiments on adult rabbits, Momigliano found that a large dose of roentgen irradiation administered in a single treatment may fail to destroy the follicles, whereas it causes rapid and progressive atrophy of the ovary. Roentgen irradiations, administered in three or four fractional doses at intervals of a few days up to a total castrating dose, have a selective destructive action on primordial follicles without injuring the ovarian tissues, vessels and interstitial glands. When the intervals between irradiations are too short or too long, the biologic action of the irradiations diminishes. The influence of fractional doses in increasing or diminishing the biologic action of the rays depends on the rhythm of cellular proliferation after the irradiations, which is unknown. Primordial follicles, in evolution to maturity, are more sensitive to the biologic action of roentgen irradiation than immature and graafian follicles. Fractional repeated doses act by stimulating primordial follicles to maturity and arresting them in their further evolution. The treatment results in complete destruction of the follicular system with consequent permanent sterility of the ovary. In the clinical field the ideal is administering fractional doses chronologically during the phases of greater cellular proliferation of the ovary. Actinic castration will give better results than those obtained by irradiations with only a large dose, if a proper chronological rhythm in administering fractional doses is established.

Archivio Italiano di Chirurgia, Bologna

46: 1-120 (May) 1937

Procaine Hydrochloride Treatment of Painful Scars. A. Pozzan.—p. 1.
Unilateral Large Polycystic Kidney in Child: Operation and Recovery: Case. M. Carravetta.—p. 15.
Diastases of Blood and Urine in Surgical Diseases of Abdomen and Digestive Tract. F. de Leo.—p. 33.
*Function of Liver in Course of Anesthesia and Surgical Interventions. P. Gagliardi.—p. 65.
Experimental Cysts of Liver. E. Caldarera.—p. 89.
Encysted Inguinal Hernia: Case. S. Teneff.—p. 107.

Function of Liver During Anesthesia.—Gagliardi studied the function of the liver in patients suffering from surgical diseases during anesthesia. The patients were placed in two groups—those with a normal liver and those who were suffering also from diseases of the liver or of the biliary tract. The studies were made by doing bengal rose tests and tests for bilirubinemia shortly before administration of anesthesia and fifteen or thirty minutes after beginning the operation. In some cases the tests were repeated two, four and eight days after the surgical intervention. The author concludes that, in patients with a normal liver, anesthesia and the surgical trauma induce more or less intense but transient insufficiency of the liver. The intensity of the insufficiency depends on the type of anesthesia and on the more or less grave nature of the operation. In patients with latent or declared insufficiency of the liver, the latter is aggravated by the action of anesthesia and surgical trauma. The reticulo-endothelial system of the liver is more sensitive than the other structures of the organ

to the action of anesthesia and surgical trauma. The bengal rose test is extremely sensitive for showing liver insufficiency, especially if it is performed in association with the test of qualitative bilirubinemia.

Pediatria, Naples

45: 857-956 (Oct. 1) 1937

*Cultivation of Leishmania in Goat's Milk. A. Laurinsich.—p. 857.
Behavior of Bacteremia in Typhoid Treated by Vaccines. P. Ritossa.—p. 867.
Possibility of Obtaining Antidiphtheritic Immunization with Single Dose of Precipitated Anatoxin. L. Cerza.—p. 885.
Chronic Gastroduodenal Ulcer in Children: Cases. N. Toro.—p. 904.
Gastrectasia in Infant with Congenital Abnormality of Duodenum: Case. Ienta Szejn.—p. 924.
Fatal Hemorrhagic Acute Meningo-Encephalic Disease in Course of Undulant Fever in Infant Aged 2 Years: Case. F. Fontana.—p. 930.

Cultivation of Leishmania in Goat's Milk.—Laurinsich made investigations on cultivating Leishmania infantum and canis. The culture mediums were prepared with pure goat or cow's milk alone or combined with rabbit's blood or the N. N. N. culture medium. According to the author the cultural development of Leishmania greatly depends on the physical, chemical and constitutional conditions of the medium. Goat's milk, because of the amount of salts and dextrose that it contains and also its hydrogen ion concentration and stronger resistance against desiccation and aging than that of other culture mediums, is a favorable culture medium for Leishmania. The latter develops well in goat's milk, better if the milk contains hemoglobin and still better in mixed goat's milk and N. N. N. culture mediums in which the organism develops exuberantly, lives longer than in any other culture medium and acquires a capacity of intense reproduction.

Prensa Médica Argentina, Buenos Aires

24: 1865-1908 (Sept. 29) 1937

Meningoblastoma with Cranial Hyperostosis: Case. J. M. Jorge and D. Brachetto-Brain.—p. 1865.
*Roentgen Skeletal Alterations in Congenital Hemolytic Jaundice. M. Acuña.—p. 1878.
Late Appearance of Electrocardiographic Changes in Myocardial Infarct. J. E. Israel and J. Ferretti.—p. 1883.
Sacrococcygeal Chordoma in Childhood. J. L. Monserrat and M. L. Olascoaga.—p. 1889.

Skeletal Roentgen Changes in Congenital Hemolytic Jaundice.—Acuña reports the cases of a group of children who were suffering from congenital hemolytic jaundice and who presented the same clinical symptoms. There was a high index of jaundice and a diminished globular resistance in all cases. An erythroblastic reaction and skeletal alterations of the type of those which are found in erythroblastic anemia were present in the minority of cases. The changes of the bones and the erythroblastic reaction were more intense in younger than in older children. Splenectomy resulted in disappearance of jaundice and improvement of the general condition of all the patients. However, the skeletal alterations and the erythroblastic reaction were not arrested by splenectomy. The author believes that the association of an erythroblastic reaction and skeletal alterations in congenital hemolytic jaundice shows a new form of hemolytic jaundice which is probably related to erythroblastic anemia. Three cases are reported.

Beiträge zur Klinik der Tuberkulose, Berlin

90: 307-390 (Sept. 18) 1937. Partial Index

Chemotherapeutic Action on Hematology: Action of Solganal-Bismosalvan Cure on Hemoclinical Picture of Tuberculous Patients. L. Mándi.—p. 321.
Anatomic Investigations on Incidence of Tuberculosis. E. Uehlinger and R. Blangey.—p. 339.
*Studies on Pneumothorax: Pressure of Pneumothorax in Case of Formation of Exudate. E. Schill.—p. 382.
*Increase and Prolongation of Tuberculous Allergy in Guinea Pigs by Preliminary Treatment with Killed Tubercle Bacilli in Connection with Hydrous Wood Fat and Petrolatum. G. Hensel.—p. 387.

Studies on Pneumothorax.—Schill discusses the behavior of the mediastinum in case of pneumothorax, particularly in case of the formation of an exudate. He shows that after the formation of an exudate the mediastinum may become so rigid that it does not yield to pressure exerted either on the side of the seropneumothorax or on the contralateral side. In other cases the mediastinum remains flexible even after the formation of an exudate, probably because of the short duration. An exudate is not the only factor that may cause mediastinal rigidity. Callosity of the pleura may develop in the absence of an exudate. The rigidity of the mediastinum, whether it has developed with or without the aid of an exudate, is of great significance in the collapse therapy of bilateral pulmonary tuberculosis, for in case of a rigid mediastinum the two lungs must be treated as separate entities. The degree of collapse must be regulated on both sides according to need, for it cannot be expected that the pressure on one side will influence the other side, as is the case in the presence of a yielding mediastinum, when the collapse on one side produces automatically some collapse on the other side. The latter effect has an advantage in bilateral processes, but in unilateral tuberculosis it has a disadvantage in that the yielding mediastinum makes it difficult to obtain the desired degree of collapse on one side. On the basis of these observations the author stresses the importance of the measurement of the contralateral pressure during refilling of the pneumothorax.

Tuberculous Allergy.—Hensel demonstrates that by treating guinea pigs with killed tubercle bacilli it is possible to produce a slight, rapidly disappearing tuberculin allergy. The specific allergy can be considerably increased and prolonged by using for the preliminary treatment killed tubercle bacilli together with hydrous wool fat and petrolatum. The allergy thus produced is to serve as a basis for further investigations on the allergy-immunity problem.

Deutsches Archiv für klinische Medizin, Berlin

180: 585-696 (Sept. 15) 1937. Partial Index

Studies on Family with Muscular Dystrophy and Hereditary Prognosis of Its Members. S. Kostakow and F. Derix.—p. 585.
Lymphatic Leukemia with Exclusive Localization in Bone Marrow and Significance of Sternal Puncture for Diagnosis: Case. E. Storti.—p. 612.
Acute Lymphatic-Leukemoid Reaction ("Acute Myeloid Leukemia") in Sepsis: Replacement of Puncture of Organ by Qualitative Examination of Blood. J. Arneth.—p. 620.
Sedimentation Reaction in Blood Serum by Means of Sodium Hydroxide. B. Serény.—p. 630.
Studies on Action of Bivalent Iron on Iron Metabolism. W. Nonnenbruch and F. Pendl.—p. 636.
*Some Observations on Relation of Carotene to Vitamin A in Human Blood Serum. W. Stepp and H. Wendt.—p. 640.

Carotene and Vitamin A in Human Blood Serum.—Stepp and Wendt maintain that the body is not able to form vitamin A from inactive substances but has to rely for its supply on the intake of the vitamin in its final form or in the form of its provitamin, carotene. Human subjects and herbivorous animals are capable of transforming vegetable carotene to a considerable extent into vitamin A, whereas carnivorous animals have this capacity to a much smaller extent or not at all; the latter obtain their vitamin A in its completed form from meat. The blood serum of healthy persons contains both vitamin A and carotene. In case of an inadequate diet the vitamin A may not be demonstrable in the serum, but a complete absence of carotene was never observed in these rare cases. While the quantity of carotene and vitamin A in the serum fluctuates, the examination of a large number of healthy adults living on a mixed diet reveals a certain average value. The author measured the vitamin A content of the serum of healthy young men in Lovibond units (blue) and the carotene in Lovibond units (yellow). Although the two measures differ, the average ratio of carotene to vitamin A was as 2.6 to 1 in examinations that were made during July. When the same subjects were examined during October and November, the ratio of carotene to vitamin A had become greatly altered, in that the carotene had increased much more than the vitamin A. It appears that, if large amounts of carotene are taken in, the organism transforms only a part of it into vitamin A, whereas if only small amounts are consumed, it may transform the largest amount. In the latter event the vitamin A may even be present in larger amounts than the carotene. This seems to indicate that the organism has the tendency to maintain a certain level for vitamin A in the serum. The authors further discuss the relation between the carotene and vitamin A contents of the serum in the different age groups and in various pathologic conditions. They found that in the higher age groups the carotene content of the blood has a tendency to increase, the vitamin A to decrease. In hyperthyroidism the vitamin A requirements are increased and the values in the

blood normal. In hypothyroidism, in myxedema, the transformation of carotene into vitamin A is impaired. In acute hepatitis, normal as well as slightly increased values were observed, whereas in the more chronic hepatic disorders the carotene as well as the vitamin A values were greatly decreased. In diabetes mellitus an increase in carotene as well as in vitamin A is the rule. The authors admit that studies on larger materials will be necessary and stress that the determination of only one substance is insufficient for a proper estimation of the vitamin A metabolism.

Frankfurter Zeitschrift für Pathologie, Munich

51: 1-170 (Sept. 16) 1937. Partial Index

Central Necrosis of Liver. G. Rothe.—p. 1.
*Formation of Diverticula on Appendix. Eleonore Wunder.—p. 18.
*Infantile Form of Marble Bone Disease on Basis of Complete Examination of Skeleton. G. Gerstel.—p. 23.
Aspects of Gemmangioma and Its Relations to Angiosarcoma. H. Schmidt.—p. 43.
Miliary Tuberculosis in Pancreas of Children. H. W. Sachs.—p. 63.
Pathologic Anatomy of Brucella Abortus Infection. A. von Albertini and W. Lieberherr.—p. 69.
Tumors of Parathyroids and Osteitis Fibrosa Generalisata Cystica Recklinghausen: Report of Three Cases. Margarete Meisel.—p. 104.

Formation of Diverticula in Appendix.—Wunder describes the appendix that was removed from a man, aged 39, who had for some time vague pains in the abdomen, which gradually became localized in the right hypogastric region. During the six months period that has elapsed since the operation the man has been free from complaints. The examination of the appendix disclosed internal (intramural) as well as external false diverticula; then there were signs of chronic inflammation with scar formations in the musculature and, in addition to this, the musculature was interspersed with nodules consisting of connective and fatty tissues. The cause and the time and course of development of this process could not be ascertained. The congenital character could not be determined, because chronic inflammations were present, the previous acute stages of which also must have impaired the musculature.

Infantile Form of Marble Bone Disease.—Gerstel shows that marble bone disease can be differentiated into two groups. In the first type, the infantile one, the disease progresses from the time of birth during the first months or years of life and leads to early death. It is probable that this form begins in utero. The second type of marble bone disease begins after puberty. In this type the onset is more sudden. It frequently begins with a spontaneous fracture. The author describes the results of the pathologic-anatomic, histologic and chemical studies on a boy who during life presented the clinical aspects of marble bone disease with anemia. The boy died at the age of 3 years and 9 months as the result of a secondary suppurating infection. The author emphasizes that the disease of the bone, that is, of the static apparatus and its formative tissue, the epidiaphysial line, must be differentiated from the disease of the bone marrow and from the disease of the endosteum. It should be remembered that, as regards origin and function, bone and bone marrow are entirely different. In this connection it is pointed out that in some species of animals the bones do not contain marrow, hemopoiesis taking place in special glands. The author shows further that the endosteum, which separates the true bone tissue from the bone marrow, is not merely a separating layer but is capable of rebuilding the bone. Thus the bones combine a triad of tissues: (1) the static apparatus or bone tissue in the strict sense of the word, (2) the separating and transforming endosteum and (3) the bone marrow. The author further gives his attention to the question as to which apparatus is involved in case of marble bone disease. On the basis of microscopic and chemical studies he denies that the so-called marble bones are bones. To be sure, there develop small areas of true bone, but they are insignificant in comparison with the marble masses. The marble mass consists of two parts which differ in origin and remain separate: the continuation of the cartilaginous matrix and the filling substance. The essential disturbance in the course of ossification consists in toothlike projections of unused cartilaginous matrix into the diaphyses. These projections prevent the formation of primitive trabeculae, so that the primary bone becomes conglobated and grows as a filling mass down into the diaphyses. Primary bone marrow is found at the border of the epidiaphysis, at which site there is no endosteum, that is, no cells which effect rebuilding of the primary bone and the complete decomposition of the cartilaginous matrix. On the outer surface of all bones brownish deposits are found which in their microscopic aspects resemble brown tumors and in which rebuilding of bone takes place. The periosteum is not involved in this process.

Klinische Wochenschrift, Berlin

16: 1337-1368 (Sept. 25) 1937. Partial Index

Formation of Tissue Fluid and of Lymph. J. Mělka.—p. 1337.
*Investigation on Vitamin A in Pneumonia. T. Lindqvist.—p. 1345.
Flavin Content of Human Milk. W. Neuweiler.—p. 1348.
Can Bile Acids Be Demonstrated in Urine of Healthy Persons? W. Wilken.—p. 1350.
Thyroid and Sex Hormone: Antithyroid Action of Large Quantities of Progynon. H. Zain.—p. 1351.
Sodium Content of Blood Serum in Myxedema. A. Margitay-Becht.—p. 1353.
*Treatment of Phthisic Night Sweats by Combination of Hypnotics Influencing Brain Stem and Cerebral Cortex. A. Hofmann.—p. 1355.

Vitamin A in Pneumonia.—In view of the limited knowledge on the vitamin A content during infectious diseases, Lindqvist investigated the vitamin A content of the serum of forty-five patients with pneumonia. He extracted the carotinoids and the vitamin A from the serum by the method recommended by van Eekelen and Emmerie. He observed that the carotinoid and vitamin A content was low during the course of the pneumonia. A tabular report indicates that in all but six of the patients the values were below the normal average. These low values exist during the first few days of the pneumonia. During the convalescence the values increase rapidly without vitamin A being added to the diet. One week after the crisis the vitamin content is usually three times as high as before the decrease in temperature. There is no storage of vitamin A in the diseased lung. The cholesterol content of the serum is considerably decreased, but this is not responsible for the disturbances in the vitamin A content. During the fever period, large quantities of vitamin A are eliminated in the urine. The vitamin A content of the liver is in most cases considerably reduced, but there are also cases in which the values are high. The author thinks that under pathologic conditions the vitamin A content of the serum is not a reliable measure for the vitamin standards of the organism. The low vitamin A content of the serum of patients with pneumonia is partly the result of excessive elimination in the urine. Moreover, the mobilization of the hepatic stores may be difficult. It was impossible to determine to what extent a low vitamin content was present before the development of the pneumonia.

Treatment of Phthisic Night Sweats.—Hofmann cites factors and investigations which prove that the secretion of sweat is influenced by the cerebral cortex. In the treatment, however, this influence is usually disregarded. The author decided to try a central modification of sweats, particularly the central suppression of the sweats of phthisic patients. Tuberculous patients, who are subject to profuse night sweats, generally say that their sleep is restless and superficial. If they are given an ordinary hypnotic (barbital), that is, one which influences the brain stem, the results are quite favorable. However, it should be understood that the patient is not merely prevented from noticing the sweating by his deeper sleep; he actually does perspire less. The results are even better if the hypnotic influencing the brain stem is combined with one which influences the cerebral cortex (sodium bromide). The author recommends the combined administration of these two types of hypnotics.

Wiener medizinische Wochenschrift, Vienna

87: 1043-1070 (Oct. 9) 1937. Partial Index

Epidemiology and Pathologic Anatomy of Influenza. C. Coronini.—p. 1043.
Practical Methods of Examination in Otology. K. Eisinger.—p. 1045.
Diagnosis and Therapy of Chronic Inflammatory Gynecologic Disorders. V. Föderl.—p. 1049.
*Value of Some Diagnostic Procedures in Diseases of Peripheral Arteries. A. von Razgha.—p. 1054.
Remarks on New Means of Obliteration of Varicose Veins. S. Szandicz.—p. 1057.

Diagnostic Methods in Diseases of Peripheral Arteries.—According to von Razgha, oscillometry and the determination of the cutaneous temperature are the two methods that are used most frequently in the diagnosis of the disorders of the peripheral arteries. In some countries oscillography is used

more widely and in others the determination of the cutaneous temperature. The author employed both methods. He shows that for the correct estimation of the oscillometric values it is necessary to consider the factors that influence the form and size of the oscillations. Although sclerotic or spastic narrowing of the vessels may reduce an otherwise normal pulse wave, smaller oscillations do not always signify local vascular changes, for a decompensated cardiac defect may likewise cause a reduction in the pulsatory filling of the vessels. In the presence of certain cardiac defects the local diagnostic value of oscillometry is therefore limited. Further the author shows that, if oscillometry reveals subnormal values, it has to be decided whether the causal factor is an organic or a spastic condition. The latter can be overcome by vasodilatory measures such as a local warm bath and by spasmolytic medicaments. The author compared the effect of an intravenously administered spasmolytic and of a hot bath in twenty-four patients with low oscillatory values. In some patients the two measures had the same effect, in others the intravenous injection proved more effective than the warm bath. Extremely severe vascular spasms may not completely yield to the combined application of the two methods; nevertheless they always effect some dilatation and serial examinations will clarify the spastic character. If oscillometry indicates an organic lesion, the clinical aspects will usually help to decide whether Buerger's disease, a specific arteritis, arteriosclerosis, embolism, thrombosis or aneurysm exists. In discussing the determination of the cutaneous temperature, the author stresses that it is influenced by several external factors and that a comparison of results is justified only if the measurements have been made under the same conditions. In cases of an asymmetry of the temperature between the two sides, oscillometric control tests were made. On the whole, the author gained the impression that the simple determination of the cutaneous temperature is of only slight value and that the oscillometric procedure gives a better insight into the peripheral vascular disturbances.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

81: 4779-4918 (Oct. 9) 1937. Partial Index

Lobar Pneumonia. Cornelia De Lange.—p. 4785.
*Treatment of Schizophrenia with Insulin and with Metrazol. G. W. Kastein.—p. 4792.
*Significance of Postmortem Roentgenologic Examination of Coronary Vessels for Coronary Thrombosis. C. L. C. Van Nieuwenhuizen and R. H. de Waard.—p. 4799.
Food Poisoning by Bacillus Botulinus Type B. A. Clarenburg and J. N. Fijen.—p. 4806.

Treatment of Schizophrenia with Insulin and Metrazol.—At Kastein's clinic, a number of schizophrenic patients were subjected to the combination treatment with insulin and metrazol. It was found that, if metrazol is administered during the insulin coma, an epileptic attack can be elicited with half the dose that would be required under normal metabolic conditions. After the epileptic attack that has been elicited by metrazol, the depth of the insulin coma is decreased so that the patient can answer questions and is able to eat alone. Moreover, the blood sugar rises after the injection of metrazol; this increase is greater when the injection is followed by an epileptic attack. Experiments on rabbits confirm these observations on the relation between insulin and metrazol, namely, that the two substances are synergistic as regards the elicitation of the epileptic attack but antagonistic in their effect on the level of the blood sugar.

Postmortem Examination of Coronary Vessels.—Nieuwenhuizen and de Waard point out that the development and extension of muscular infarction is determined not only by local changes in the wall of the coronary arteries but also by dynamic factors (collateral blood supply, condition of venous drainage). Therefore, changes in the electrocardiogram must be evaluated with care, for they are not necessarily caused by anatomic changes in the coronary arteries and in the cardiac muscle. The authors show that the postmortem roentgenologic examination of the coronary system, before and after filling with a contrast medium, is a valuable aid in throwing light on these problems. They describe observations in five cases. They found that coronary thrombosis may be absent in cases of severe calcification and stenosis, whereas it may be found in the presence of a moderate degree of calcification and narrowing. Moreover, there is evidence that the clinical aspects of coronary thrombosis may be produced by acute coronary insufficiency without infarction. Finally the authors describe an infarct that was observed in a patient with a dissecting aneurysm of the aorta. In this patient the sinus venosus was obliterated by the pressure of the aneurysm; this produced stasis in the venous drainage and the latter, together with the insufficient blood supply caused by calcification and the narrowing of the descendent branch of the left coronary artery, caused a stasis infarct.

Bibliotek for Læger, Copenhagen

129: 287-340 (Sept.) 1937

*Investigations in Illumination of Intoxication Theory in Dementia Praecox with Especial Reference to Attempts at Total Transfusion. P. J. Reiter.—p. 287.
Bacteriologic-Epidemiologic Experiences Concerning Infections with Gastro-Enteritis Bacilli of Paratyphoid Group: C'td. M. Kristensen, K. Bojlén and C. Faarup.—p. 310.

"Total Transfusion" in Dementia Praecox.—By "total transfusion" Reiter means emptying most of the patient's blood at one session and introducing an equal amount from a number of donors. There are many practical obstacles—the requirement of preferably nine donors of the patient's type for each experiment, a correct diagnosis, an active process as far as can be established, the patient's physical condition and consent of the patient's family to the intervention. Attempts at detoxication of grave schizophrenic processes by "total transfusion" have during four years been possible in only four cases, one of paranoid dementia, one of hebephrenia and two of catatonia. No donors were from among the patients' relatives. The results seem to the author to indicate that at least in a considerable number of cases of schizophrenia the intoxication theory is probably correct; he says that the clarification in the second case to a marked degree upholds the theory, which is also supported by the results in the first and third cases. In the fourth case, in which the psychosis was resistant to the "total transfusion," there was marked reaction of the white blood corpuscles in the direction of proliferation of immature cell forms. When careful preparations are made and the operation is performed with the necessary technical skill, "total transfusion" in itself is regarded as apparently relatively safe.

Hospitalstidende, Copenhagen

80: 1045-1076 (Sept. 21) 1937

Some Cranial Deformities in Children. M. Fog.—p. 1045.
*Changes in Serum Proteins in Patients with Venereal Lymphogranuloma (Nicholas-Favre) and Genito-Anorectal Syndrome (O. Jersild). M. Jersild.—p. 1059.
Dextrose Studies: II. M. Norn.—p. 1069.

Changes in Serum Proteins in Venereal Lymphogranuloma.—Jersild examined fifty-five serums, the number of cases of venereal lymphogranuloma in Denmark being limited. He states that hyperproteinemia, increased sedimentation, a positive formol-gel reaction and a positive Takata reaction frequently appear in connection with venereal lymphogranuloma and rectal stricture when the infection is active (acute or chronic). In 86 per cent of the acute cases the relative globulin percentage was more than 40, in 53 per cent there was positive formol-gel reaction, in 55 per cent a positive Takata reaction. In 96 per cent of the chronic cases the relative globulin was more than 40, in 92 per cent there was positive formol-gel reaction and in 92 per cent a positive Takata reaction. When only a positive Frei reaction testified to an ended venereal lymphogranuloma infection, corresponding shiftings in the serum were not found. Of 10,000 serums sent to the State Serum Institute, only twenty, or 2 per cent, showed a positive formol-gel reaction in less than three hours; of these, two were from patients with rectal stricture, one from a patient with a disorder possibly due to an earlier venereal lymphogranuloma. Since protein changes in the serum are rare in Denmark, a certain significance must be attached to them in the diagnosis of venereal lymphogranuloma. The changes in the serum proteins in venereal lymphogranuloma are perhaps an expression of a disorder in the reticulo-endothelial system. From the presence of abundant plasma cells in the affected tissue in venereal lymphogranuloma and other disturbances with hyperglobulinemia (multiple myelomas, kala-azar), this cell form presumably in some way plays a part in the serum changes, whether it occurs in the reticulo-endothelial system in or outside the bone marrow.